Dallas Number SOUTHERN MEDICAL ASSOCIATION
Forty-Fifth Annual Meeting
Dallas, Texas, Monday, Tuesday, Wednesday and Thursday, November 5 - 8, 1951

VOLUME 44 OCTOBER 1951 NUMBER 10

Southern Medical Journal

Journal of the Southern Medical Association

Copyright, Southern Medical Association, 1951. Published monthly by the Southern Medical Association, Empire Building, Birmingham 3, Alabama. Annual subscription $10.00. Entered as Second-Class Matter at the Post Office at Birmingham, Alabama, under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized December 20, 1921.

TABLE OF CONTENTS

PROGRAM, Dallas Meeting, Southern Medical Association 973

DALLAS—Where We Meet 962

Physical Treatment in Internal Medicine. Sedgwick Mead, St. Louis, Missouri 881

Discussed by E. M. Smith, Washington, District of Columbia; Walter E. Fleischer, Baltimore, Maryland.

Combined Drug Therapy for Parkinson's Disease. Joseph C. Edwards, Emily E. Mueller, Masao Ohmoto, Gus Furla and Sedgwick Mead, St. Louis, Missouri 886

Discussed by Louis H. Kohler, St. Louis, Missouri; James L. O'Leary, St. Louis, Missouri.

The Use of the Cystogram and Urethrogram in the Diagnosis and Management of Rupture of the Urethra and Bladder. Jarratt P. Robertson, Birmingham, Alabama, and James W. Headstream, Little Rock, Arkansas 895

Discussed by Samuel L. Raines, Memphis, Tennessee.

Splenectomy as a Method of Treatment in a Case of Felty's Syndrome. W. Howard Wilson and Alfred T. Hamilton, Raleigh, North Carolina 902

The Use of Procaine Amide in Ventricular Tachycardia. R. Maxwell Anderson, John A. Boone and Ralph R. Coleman, Charleston, South Carolina 905

Contrast Between the Anoxia of Experimental Pulmonary Arterial Occlusion and of Tracheal Obstruction with Special Reference to Changes in the S-T Segment and T-Wave. John T. Cuttino, Charleston, South Carolina 909

Congenital Malformations of the Heart Amenable to Surgery: With Special Emphasis on Isolated Valvular Pulmonary Stenosis with Closed or Patent Foramen Ovale. J. Francis Dammann, Jr., Los Angeles, California 915

Esophageal Hiatus Hernia Simulating Coronary Artery Disease. Edmond K. Doak, Houston, Texas 918

Discussed by E. Sterling Nichol, Miami, Florida.

The Differential Diagnosis of Coma. Roscoe L. Pullen, New Orleans, Louisiana 921

Chronic Rheumatoid Arthritis. Euclid M. Smith, Hot Springs National Park, Arkansas 925

Discussed by Benjamin B. Wells, Little Rock, Arkansas; Paul O. Hagemann, St. Louis, Missouri.

The Heart in Hemochromatosis. Harold W. Keschner, Coral Gables, Florida 927

Discussed by M. Pinson Neal, Columbia, Missouri.

Cyclodialysis: A Simplified Technic. James H. Allen, New Orleans, Louisiana 931

Discussed by R. Allen Lawrence, Jr., Nashville, Tennessee.

Continued on Next Page

TABLE OF CONTENTS
Continued

The Neurosurgical Aspects of Spontaneous Subarachnoid Hemorrhage. J. G. Lyerly, Jacksonville, Florida 936

Discussed by Henry G. Schwartz, St. Louis, Missouri; R. Eustace Semmes, Memphis, Tennessee.

Primary Breech Presentation and External Cephalic Version: The Management of 308 Primary Breech Presentations. Isadore A. Siegel and Hugh B. McNally, Baltimore, Maryland 942

Discussed by Leo J. Hartnett, St. Louis, Missouri; W. D. Beacham, New Orleans, Louisiana.

The General Practitioner and Fractures of the Lower Extremities. J. Albert Key, St. Louis, Missouri 950

Discussed by Charles R. Rountree, Oklahoma City, Oklahoma.

EDITORIALS 956

The Dallas Meeting

Psittacosis from Poultry

Syndrome of Vitamin A Overdosage

BOOK REVIEWS 958

BOOKS RECEIVED 960

SOUTHERN MEDICAL NEWS 960

MESSAGE FROM THE GENERAL CHAIRMAN, Frank A. Selecman 961

OFFICERS of the Dallas County Medical Society, Committees on Arrangements for Dallas Meeting, and Officers of the Southern Medical Association 972

NEW (8TH) EDITION

CECIL & LOEB'S MEDICINE

In the New (8th) Edition of this standard textbook, pathologic physiology is integrated into all discussions, and modern concepts of psychosomatics are incorporated throughout. Treatment is given in detail. The descriptions of disease are unsurpassed for completeness and clarity.

By 169 American Authorities. Edited by Russell L. Cecil, M.D., Cornell University, and Robert F. Loeb, M.D., Columbia University. 1627 pages, 204 illustrations. $12.00.

SEND ORDERS TO

J. A. MAJORS COMPANY

New Orleans 12 Dallas 1 Atlanta 3

The Tulane University of Louisiana School of Medicine

DIVISION OF GRADUATE MEDICINE

Basic Ophthalmology, twelve months, beginning July 9, 1951.

Basic Science as Applied to Orthopedics, five months, beginning each September 1st and each February 1st.

Tropical Medicine and Public Health leading to the degree of Master of Public Health and Master of Public Health (Tropical Medicine). Nine months duration beginning each September.

Opportunities are usually available for continuation study in most of the fields of Medical Practice.

For Detailed Information write

DIRECTOR
DIVISION OF GRADUATE MEDICINE
Tulane University of Louisiana
1430 Tulane Avenue, New Orleans, La.

Long Awaited . . . . . Now Ready

ANATOMY in SURGERY

by PHILIP THOREK

M.D., F.A.C.S., F.I.C.S., Assistant Clinical Professor of Surgery, University of Illinois, College of Medicine

FOREWORD BY
Warren H. Cole, M.D.

1st Edition, June, 1951

$22.50

Second printing before publication

More than twelve years in preparation, this important and long-expected volume combines the author's varied experience in teaching anatomy with clinical observations made at the operating table.

Fundamental anatomy in pithy, concise form, organized for quick reference or sustained investigative study. The application of anatomic facts are shown in relation to normal function and to traumatic and pathologic conditions of the human body.

In clear and refreshing style, the entire body is discussed anatomically and the principles of technic described for the important operations.

The magnificent illustrations, all the work of one artist, Carl Linden, reflect punctilious attention to the anatomic detail. Many are presented in third-dimensional views. All are original, unique, and closely interwoven with the accompanying text.

Adequate and critical selection and evaluation of text material—sound organization—excellent illustrations—are combined to offer to the profession an authoritative, practical work of value and usefulness.

1 Volume, 7" x 10"
996 Pages, 720 Illustrations, 211 in Color

J. B. LIPPINCOTT COMPANY, E. Washington Square, Phila. 5, Pa.
Please enter my order and send me:
____copies, Philip Thorek, ANATOMY IN SURGERY $22.50
*Name*_____
*Address*_____ ☐ Cash enclosed
*City*_____ *Zone*____ *State*_____ ☐ Charge my Account

Lippincott Books
Philadelphia • London • Montreal

SMITH, KLINE & FRENCH LABORATORIES
PHILADELPHIA

3 facts you should know about
'ESKACILLIN-SULFAS'

Dear Doctor:

'Eskacillin-Sulfas' is leading the trend to combined penicillin-sulfonamide therapy. Each teaspoonful of this pleasant-tasting preparation supplies 100,000 units of crystalline potassium penicillin G and a total of 0.5 Gm. (0.167 Gm. each) of sulfadiazine, sulfamerazine and sulfamethazine.

Three important facts account for the enthusiastic acceptance of 'Eskacillin-Sulfas':

1. Investigators have pointed out that the newer antibiotics (the "-mycins") may not be the most effective agents for serious infections caused by staphs, streps and pneumos — nor are they the therapy of choice for a good number of the coli, Klebsiella and proteus groups of organisms. For these infections it has been demonstrated that penicillin and the sulfonamides are usually indicated.

2. The use of combined penicillin-sulfonamide therapy greatly diminishes the chances of the development of resistant organisms.

3. Of great importance to your patients, 'Eskacillin-Sulfas' costs far less than comparable therapy with the newer antibiotics.

If you haven't already done so, why not give 'Eskacillin-Sulfas' a try? You will find it the therapy of choice for most of the bacterial infections you commonly see in everyday practice.

Very sincerely,

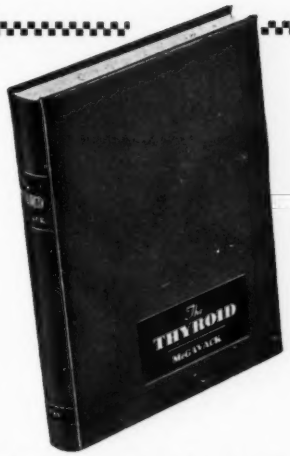
Francis Boyer

Francis Boyer
Vice-President

FB:PG

ANOTHER MOSBY BOOK

McGavack's
The Thyroid



IN WHICH THE AUTHOR FILLS A REAL NEED IN MEDICAL LITERATURE WITH A COMPREHENSIVE EXPOSITION OF THE EXISTING FACTUAL MATERIAL ON THE IMPORTANT AND FASCINATING SUBJECT OF THE THYROID GLAND.

★ ★ ★ ★ ★

New interest in the goitrogenic compounds and the realization of their potential influence upon the human thyroid has been the starting point for studying the chemical, enzymatic and hormonal behavior of the thyroid at predetermined levels of physiological activity and in diseased states of known type.

The combined forward movements in the investigation of the thyroid have created a wealth of material which Dr. McGavack has carefully distilled. In his long study of the subject, he acquired the art of distinguishing what is useful and important—and the result is a very fine book of the utmost value to either student or practitioner.

SUMMARIZING THE BOOK, DR. McGAVACK HAS:

1. Put down the major contributions of recent years in such fashion as to make them readily available to the undergraduate student, investigator and internist alike.

2. Expressed his own viewpoint clearly, whenever possible, indicating his leaning in regard to questions legitimately in dispute.

3. Presented a rationalization of the chemistry and physiology of the thyroid, with the practical needs of the busy doctor in mind—and at the same time sufficiently documented for the researcher and student.

4. Described the diseases of the thyroid in relation to the newer understanding of its physiology —and has stated the clinical features and management of these diseases with real simplicity.

5. Turned over the surgical approach to the thyroid to well qualified surgeons whose contribution forms a separate section of the book. The historical chapter has also been segregated.

By THOMAS HODGE McGAVACK, B.A., M.D., F.A.C.P.

Professor of Clinical Medicine, New York Medical College; Director of the New York Medical College, Metropolitan Hospital Research Unit.

With a Section of Surgery by JAMES M. WINFIELD, B.A., M.D., F.A.C.S., Professor and Director of Surgery, New York Medical College; and WALTER L. MERSHEIMER, B.S., M.D., F.A.C.S., Associate Professor of Surgery, New York Medical College; and a Section on History by DOROTHY B. SPEAR, Ph.B., Librarian, and THOMAS HODGE McGAVACK.

646 pages, illustrated. Price, $13.50.

Order Form

SMJ 10-51

The C. V. Mosby Company
3207 Washington Blvd., St. Louis 3, Mo.

Please send me:
McGavack's THE THYROID ($13.50)
☐ Enclosed find check. ☐ Charge my account.

Name_____

Address_____

LEA & FEBIGER - New Books and New Editions

Visit Us At Booth 33 • Dallas, Texas • November 5th to 8th, 1951

SOFFER—DISEASES OF THE ENDOCRINE GLANDS
By LOUIS J. SOFFER, M.D., Columbia University, N. Y. New. 1142 pages, 88 illustrations and 3 plates in color. $15.00

GOLDBERGER—HEART DISEASE, ITS DIAGNOSIS AND TREATMENT
By EMANUEL GOLDBERGER, M.D., Montefiore Hospital, New York. New. 651 pages, 229 illustrations on 90 figures. $10.00

MUSSER-WOHL—INTERNAL MEDICINE
Edited by MICHAEL G. WOHL, M.D., Temple University Medical School, Philadelphia. New (5th) edition. Just ready.

RICE—LOW-SODIUM DIET
A Manual for Patients. By THURMAN B. RICE, A.M., M.D., Indiana University School of Medicine, Indianapolis. New. 103 pages, 14 food charts. $2.75

BORTZ—DIABETES CONTROL
A Guide for Patients. By EDWARD L. BORTZ, M.D., Graduate School of Medicine, University of Pennsylvania, Philadelphia. New. 264 pages, illustrated. $3.50

SHURTLEFF—CHILDREN'S RADIOGRAPHIC TECHNIC
By FORREST E. SHURTLEFF, R.T., Children's Medical Center, Boston. New. 80 pages, 7x10 inches, 52 illustrations and 14 tables of technic. $3.75

WINTROBE—CLINICAL HEMATOLOGY
By MAXWELL M. WINTROBE, M.D., School of Medicine, University of Utah. New (3rd) ed. 1048 pages, 220 illustrations and 17 plates, 13 in color. $12.50

PECK AND KLEIN—THERAPY OF DERMATOLOGIC DISORDERS
By SAMUEL M. PECK, B.S., M.D., Columbia University, N. Y.; and GEORGE KLEIN, M.D., New York Medical College. New. 383 pages, illustrated. $6.50

ELLER AND ELLER—TUMORS OF THE SKIN
By JOSEPH J. ELLER, M.D., and WILLIAM D. ELLER, M.D., New York City Hospital. New (2nd) edition. Just ready.

MULLIGAN—HUMAN NEOPLASMS
By R. M. MULLIGAN, M.D., University of Colorado School of Medicine. New. 317 pages, 7x10 inches, 230 illustrations. $7.50

RITVO—CHEST X-RAY DIAGNOSIS
By MAX RITVO, M.D., Harvard Medical School. New. 558 pages, 7x10 inches, 615 illustrations on 418 figures, 1 plate in color. $15.00

HOLMES AND SCHULZ—THERAPEUTIC RADIOLOGY
By GEORGE W. HOLMES, M.D., Waldo Co. Gen. Hospital, Maine; and MILFORD D. SCHULZ, M.D., Harvard Medical School. New. 347 pages, 121 illustrations, 10 in color. $7.50

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.

Now at your service...

QUICK ACTING
POTENT
HIGHLY STABLE
WELL TOLERATED

XYLOCAINE®
(Pronounced Xī lō' cain)
HYDROCHLORIDE
ASTRA
(Brand of lidocaine hydrochloride*)
AN AQUEOUS SOLUTION

Dispensed in 50 cc and 20 cc multiple-dose vials containing 0.5%, 1% or 2% solution. All solutions available without epinephrine and with epinephrine 1:100,000. 2% solution also supplied with epinephrine 1:50,000.

STOCKED BY LEADING WHOLESALE DRUGGISTS AND SURGICAL SUPPLY HOUSES.

a NEW local anesthetic

A potent, short-acting local anesthetic, producing on injection, a more prompt, intense and extensive anesthesia than equal concentrations of procaine hydrochloride. Useful and effective either with or without epinephrine, it has been described (1) as the most promising of the new local anesthetics, approaching in efficiency the nerve blocking properties of piperocaine, and in toxicity, the advantages of safety presented by procaine.

(1) Hanson, I. R. and Hingson, R. A., *Current Researches in Anesthesia and Analgesia*, 29:136 (May-June) 1950

ASTRA PHARMACEUTICAL PRODUCTS, INC. WORCESTER, MASS. U.S.A.

*U.S. Patent No. 2,441,498

3 New HOEBER Books

MAZER and ISRAEL'S

Diagnosis and Treatment of MENSTRUAL DISORDERS AND STERILITY

NEW 3RD EDITION! The medical treatment of endometriosis, genesis of the menopausal syndrome, cervical biopsies as office procedure, "preclinical abortion", and many, many more new discussions bring this new edition completely up-to-date. The success of the book stems from its thoroughly practical nature. Office procedures are stressed. It is based on the authors' wide clinical experience. Theory is held to a minimum. The subject is organized by presenting symptoms—as you see them in your office. Send for your copy today.

By CHARLES MAZER, M.D., F.A.C.S., and LEON ISRAEL, M.D., F.A.C.S., *Grad. Sch. of Med., Univ. of Penna.;* 560 pp., 157 illus., 3 in full color, $10.00.

REESE'S

TUMORS OF THE EYE

CLINICAL! This new book covers all known tumors and tumor-like lesions that affect the eye, as well as those lesions which must be considered in differential diagnosis. Symptomatology, pathology, diagnosis, prognosis, and treatment of each tumorous condition is clearly described with constant emphasis on clinical aspects. Therapy, both surgical and radiation, is given in detail.

By ALGERNON B. REESE, M.D., *Attending Ophthalmologist and Pathologist, Institute of Ophthalmology, Presbyterian Hospital, N. Y.* 584 pp., 511 illus., 122 in full color, $20.00.

TAUB'S

CLINICAL ALLERGY

NEW 2ND EDITION! This practical book for the family physician avoids theoretical details. Rather, it offers a compact guide to the everyday management of allergic disorders. Out of personal experience, the author brings you abreast of the newest treatments, explaining specifically, when and how to use the antihistaminics, ACTH, and Cortisone. It covers not only the most widespread forms of allergy, but also such special problems as genitourinary allergies, cardiovascular allergies, allergy of the eyes, allergic headache, etc.

By SAMUEL J. TAUB, M.D., *Professor of Medicine and Chairman of the Department of Allergic Diseases, Chicago Medical School; Professor of Medicine, Cook County Graduate School; Attending Physician, Cook County and Columbus Hospitals.* 288 pages. Tables. $4.50.

On Approval Order Coupon

PAUL B. HOEBER, INC.

smj 1051

Medical Book Department of Harper & Brothers
49 East 33rd Street, New York 16, N. Y.

Send Me On Approval:

☐ Mazer & Israel's MENSTRUAL DISORDERS & STERILITY.....$10.00
☐ Reese's TUMORS OF THE EYE.....$20.00
☐ Taub's CLINICAL ALLERGY.....$ 4.50

☐ Bill Me ☐ Check Enclosed (Returned Privileges, of course)

Name.....

Address.....

City.....Zone.....State.....

when pregnancy is contraindicated —

here is important news
about conception control:

When the Contraceptive Clinic of a famous University Medical Center announces that it has discarded the jelly-diaphragm technic in favor of the simple **LOROPHYN® SUPPOSITORY** technic—

that is really important news!

the explanation:

Studies in this clinic proved that the efficacy of **LOROPHYN SUPPOSITORIES** was equal to that of the diaphragm-jelly technic.*

Such efficacy is a result of several factors: spermicidal effectiveness, barrier action, and the ease and simplicity of the **LOROPHYN SUPPOSITORY** technic which favor regular, accurate use.

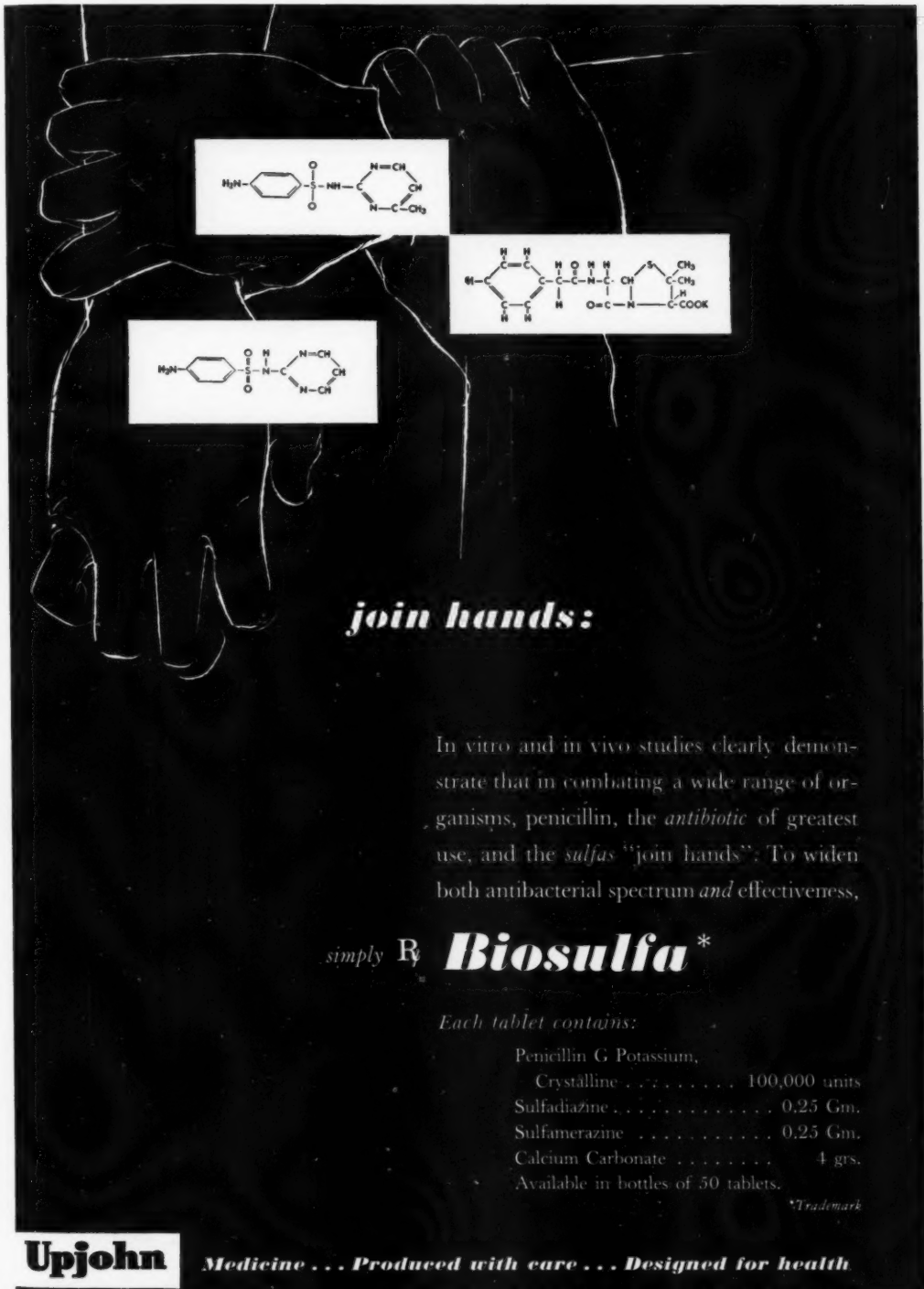
Lorophyn Suppositories N.N.R. contain phenylmercuric acetate 0.05% and glyceryl laurate 10% in a water-dispersible, synthetic wax base. Hermetically sealed in foil to prevent leakage in hot weather.

*Eastman, N. J.: Further Observations on the Suppository as a Contraceptive, South. M. J. 42:346, 1949.

Eastman, N. J. & Seibels, R. E.: Efficacy of the Suppository and of Jelly Alone as Contraceptive Agents, J. A. M. A. 139:16, 1949.

Reprints on request.

EATON LABORATORIES, INC.
NORWICH, NEW YORK


join hands:
In vitro and in vivo studies clearly demonstrate that in combating a wide range of organisms, penicillin, the *antibiotic* of greatest use, and the *sulfas* "join hands": To widen both antibacterial spectrum *and* effectiveness,
simply Rx Biosulfa*
Each tablet contains:
Penicillin G Potassium, Crystalline . . . . . 100,000 units
Sulfadiazine . . . . . 0.25 Gm.
Sulfamerazine . . . . . 0.25 Gm.
Calcium Carbonate . . . . . 4 grs.
Available in bottles of 50 tablets.
*Trademark
Upjohn
Medicine . . . Produced with care . . . Designed for health
THE UPJOHN COMPANY, KALAMAZOO, MICHIGAN

Logically Preferred—Clinically Proven!

DOHO RESEARCH PRODUCTS

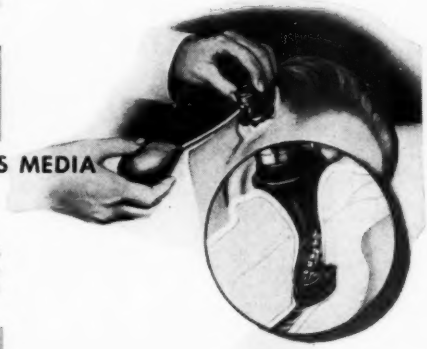
STRICTLY ETHICAL—ADVERTISED ONLY TO THE PROFESSION

Auralgan

for ACUTE OTITIS MEDIA
REMOVAL OF IMPACTED CERUMEN
AS AN ADJUNCT TO SYSTEMIC ANTI-INFECTIVE THERAPY
CONTAGIOUS DISEASE EAR INVOLVEMENTS

FORMULA: Glycerol (DOHO) .....17.90 GRAMS
(Highest obtainable spec. grav.)
Antipyrine ..... 0.81 GRAMS
Benzocaine ..... 0.21 GRAMS

O-TOS-MO-SAN



for CHRONIC SUPPURATIVE OTITIS MEDIA
FURUNCULOSIS AND
AURAL DERMATOMYCOSIS

FORMULA: Urea ..... 2.0 GRAMS
Sulfathiazole ..... 1.6 GRAMS
Glycerol (DOHO) Base 16.4 GRAMS

RHINALGAN

Nasal Decongestant *WITHOUT* Circulatory or Respiratory Effect

for COMMON COLD · SINUS INFECTIONS · PRE AND POSTOPERATIVE NASAL SHRINKAGE · HAY FEVER ALLERGIC AND HYPERTROPHIC RHINITIS

FORMULA: Desoxyephedrine Saccharinate 0.50% w/v in an isotonic aqueous solution with 0.02% Laurylammonium saccharin. Flavored. pH 6.4.

Supplied in **THE DOHONY SPRAY-O-MIZER*** (Combination Spray and Dropper)
*TRADE MARK—PAT. PEND.
Also for Office and Hospital use in Pint bottles.

PLEASANT—EFFICIENT
NON-TOXIC—BACTERICIDAL

Scientific and Clinical Data sent on request

DOHO CHEMICAL CORP., 100 Varick St., New York 13, N. Y.

Also MALLON DIVISION — Makers of RECTALGAN

NEW
ANTIBIOTIC
OINTMENT
FOR

skin infections

*Polycin**

PITMAN-MOORE

(Polymyxin B. Sulfate
*and Bacitracin in Fuzene**
. . . a special diffusible base)

*TRADE MARK

*Polycin**

offers these distinctive advantages:

(a) **Wide antibacterial spectrum**—Polycin effectively combats BOTH bacitracin-sensitive (gram positive) organisms and polymyxin-sensitive (gram negative) organisms.

(b) **High diffusion to affected area**—Polycin is notable also for its unique base, Fuzene. This original combination of carbowax diesters and petrolatum allows maximal diffusion of the contained antibiotics to the site of the infection. Moreover its exceptional *spreading* property makes Polycin economical to use. Both polymyxin and bacitracin remain stable in Fuzene at ordinary temperatures.

Clinical Field—Typical indications[1,2] include: seborrhea; pyoderma; impetigo; sycosis barbae; folliculitis; and secondary infections of skin carcinomas, burns, eczemas, contact dermatitis, varicose ulcers, neurodermatitis, psoriasis and dermatophytoses.

Supplied in 15 Gm. collapsible tubes.

Clinical samples available on request.

*TRADE MARK

PITMAN-MOORE CO.
Pharmaceutical and Biological Chemists
Division of Allied Laboratories
INDIANAPOLIS 6, INDIANA

1. Price, C. W., Randall, W. A., Welch, H., and Chandler, V. L.: Studies of the combined Action of Antibiotics and Sulfonamides, Amer. J. Public Health *39*:340 (1949).
2. Gastineau, F. M., and Florestano, H. J. L.: Clinical Experience with Polycin, A Polymyxin-Bacitracin Ointment. In Press.

first high potency,
liquid oral penicillin...
fully effective in
3 to 4 doses* daily

White's

DRAMCILLIN-250

(250,000 units of buffered penicillin G potassium per teaspoonful)

- No disturbance of patient's sleep
- No difficulty adjusting dosage schedule to avoid mealtimes
- No discomfort and inconvenience of injections

*Suggested adult dosage, 2 teaspoonfuls

ALSO:
White's Dramcillin • White's Dropcillin
White's Dramcillin with Triple Sulfonamides

WHITE LABORATORIES, INC., Kenilworth, N. J.

a promising outlook in acute rheumatic fever

ACTHAR, instituted early and in adequate dosage, gives promise of lasting results in rheumatic fever.

ACTHAR, in an increasing number of rheumatic fever patients, has shortened the course of the disease, minimized residual cardiac damage and probably reduced mortality. Systemic signs and symptoms of rheumatic fever usually disappeared within three days—the acute rheumatic process was brought under control, and the electrocardiogram and enlarged heart returned to normal, with regression of pathologic murmurs. Marked cardiac failure, necessitates special caution, since sodium and water retention may occur.

ACTHAR is available in vials of 10, 15, 25 and 40 U.S.P. Provisional Units. One milligram of the Armour Standard for ACTHAR is now accepted as the International Unit; the biologic potency of one International Unit is equal to the biologic potency of one U.S.P. Provisional Unit.

ACTHAR

THE ARMOUR LABORATORIES BRAND OF ADRENOCORTICOTROPIC HORMONE (A.C.T.H.)

THE ARMOUR LABORATORIES

CHICAGO 11, ILLINOIS

world-wide dependability

PHYSIOLOGIC THERAPEUTICS THROUGH BIORESEARCH

'Eskel' relieves 60% of bronchial asthma attacks..

from the May-June issue of the Annals of Allergy[1]*:*

CONCLUSIONS

['Eskel'], in 100 mg. doses, relieved a significant percentage (60 per cent) of patients observed during the acute attack of asthma... Side reactions . . . occurred in a low percentage of clinic patients . . .

One advantage of the administration of ['Eskel'] is its prolonged duration of action. Also, since ['Eskel'] has little effect on blood pressure when given in ordinary dosage, it should be particularly useful in asthmatics with concomitant hypertension.

From the results obtained in this series of forty-five patients and from other patients now under observation, it is felt that ['Eskel'] will have a useful place in the treatment of bronchial asthma.

Two tablet sizes

'Eskel' is now available in *two* tablet sizes: 20 mg. (new) and 40 mg. Each tablet contains a blend of active principles, chiefly khellin, extracted from the plant Ammi visnaga.

1. Derbes, V.J., et al.: Observations on the Action of Khellin in Attacks of Bronchial Asthma, Ann. Allergy 9:354 (May-June) 1951.

'Eskel' T.M. Reg. U.S. Pat. Off.

Smith, Kline & French Laboratories, Philadelphia

BLOOD PRESSURE REDUCED

Hypertensive patients benefited 3 ways

STOLIC® and STOLIC® FORTE Tablets bring about a decrease in systolic pressure of approximately 35 mm. of mercury. Pressure begins to fall 15 to 30 minutes after administration; maximum reduction in pressure is produced in about 2½ to 3 hours. The effect of a dose lasts 4 to 6 hours.

Because of their prolonged action, STOLIC Tablets make it possible to maintain steady effects without the need for frequently repeated doses. This is an important advantage in the management of patients with essential hypertension and other circulatory disturbances in which it is desirable to lower the general blood pressure over an extended period of time.

STOLIC Tablets benefit hypertensive patients in 3 ways:

1) by direct action on the vasomotor system as provided by

MANNITOL HEXANITRATE

Mannitol hexanitrate has a prolonged vasodilating action by virtue of its relaxing effect on the smooth muscle of the arteries. This action results in a gradual decrease in arterial pressure; diminished pressure is seen for 4 to 6 hours after administration.

2) by general sedative and calmative effects as provided by

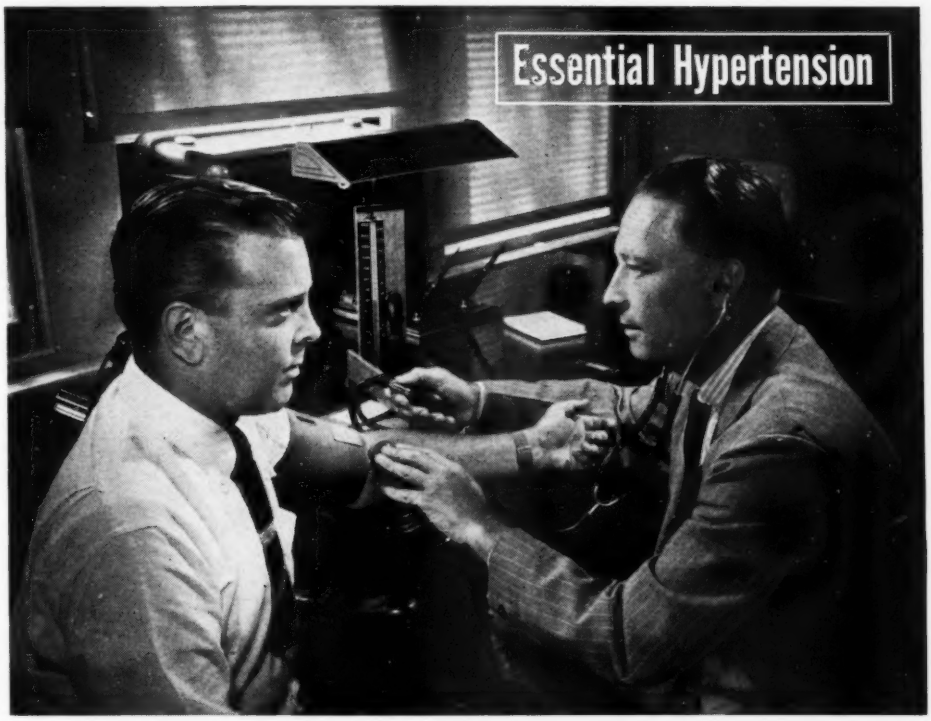
DELVINAL® VINBARBITAL

Delvinal alleviates anxiety and tension, makes patients less apprehensive and less irritable. This tends to prevent fluctuations in blood pressure of emotional origin. Delvinal also contributes to the control of vasomotor function by subduing nerve-reflex excitability.

3) by a beneficial effect on abnormal capillary fragility as provided by

RUTIN

Rutin has been found useful in the treatment of increased capillary fragility associated with hypertension. Since cerebral and retinal hemor-



Fall in blood pressure begins 15 to 30 minutes after administration of Stolic. Effect of dose lasts 4 to 6 hours.

rhages occur more frequently when hypertension is accompanied by increased capillary fragility, the administration of rutin is a logical procedure for guarding against such vascular accidents.

COMPOSITION

STOLIC® TABLETS	*Each* STOLIC *Tablet contains:*	
	Mannitol hexanitrate	15 mg. (¼ grain)
	Rutin	20 mg. (⅓ grain)
	Delvinal vinbarbital	30 mg. (½ grain)
STOLIC® Forte TABLETS	*Each* STOLIC FORTE *Tablet contains:*	
	Mannitol hexanitrate	30 mg. (½ grain)
	Rutin	20 mg. (⅓ grain)
	Delvinal vinbarbital	30 mg. (½ grain)

Dosage

The recommended dose for adults is 1 to 2 tablets at intervals of four to six hours. If the systolic pressure is excessively elevated, the dose may be increased in accordance with clinical judgment.

Packaging

STOLIC and STOLIC FORTE Tablets are supplied in bottles of 100 and 1,000.

SHARP & DOHME, Philadelphia 1, Pa.

Wyeth®

Some Peptic Ulcer Patients Do Better on Phosphaljel

Clinical experience confirms that certain types of difficult-to-manage ulcer show a more striking and lasting response to PHOSPHALJEL therapy than to other types of medication. Palatable PHOSPHALJEL is a peptic ulcer medication of choice in the following conditions:

- Marginal or jejunal ulcer following gastrojejunostomy.[1]
- Ulcer complicated by deficiency of pancreatic secretion or by diarrhea.[1,2,3]
- Prophylactically, after peptic ulcer surgery, and during seasonal recurrence.[3]

PHOSPHALJEL quickly relieves pain and promotes healing. Excellent for oral therapy, and for intragastric drip therapy.

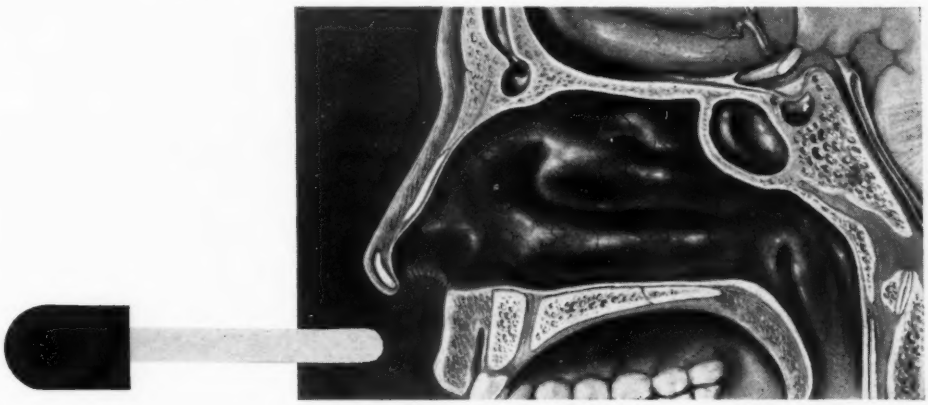
1. Fauley, G. B., Freeman, S., Ivy, A. C., Atkinson, A. J., and Wigodsky, H. S.: Arch. Int. Med. 67:653, 1941.
2. Upham, R., and Chaikin, N. W.: Rev. Gastroenterol. 10:287, 1943.
3. Collins, E. N.: J. A. M. A. 127:890, 1945.

PHOSPHALJEL®

ALUMINUM PHOSPHATE GEL WYETH

Wyeth INCORPORATED, PHILADELPHIA 2, PA.

10 *clinical advantages*



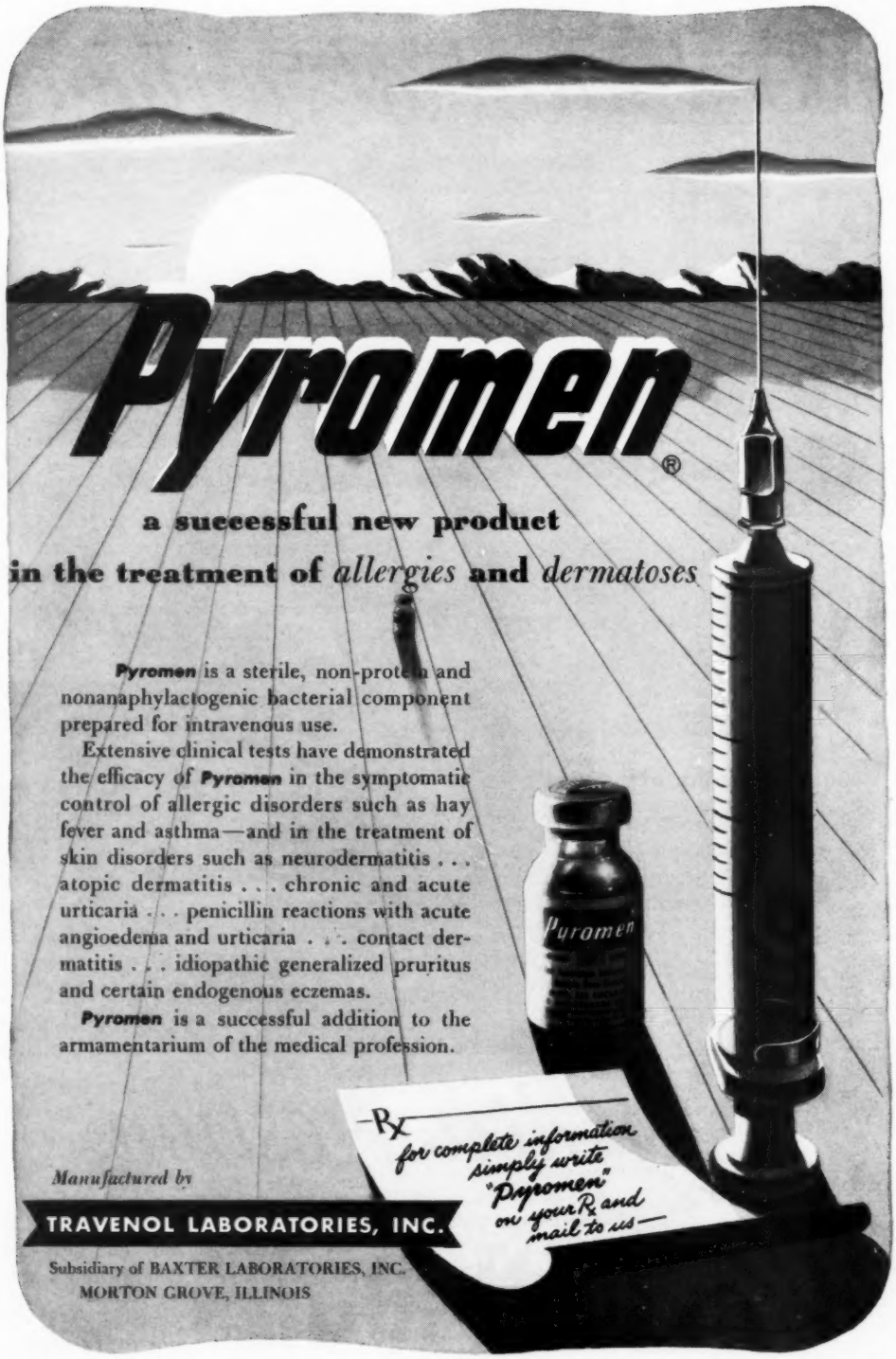
WITH JUST 2 DROPS *Privine* .05%

in decongestion

1. potent 2. prompt 3. prolonged 4. free from significant C.N.S. effects 5. few or no systemic effects 6. virtually non-allergenic 7. consonant with local physiologic function 8. non-irritating 9. safe 10. fosters patient cooperation.

PRIVINE® (BRAND OF NAPHAZOLINE) HYDROCHLORIDE 8/3718 M

Ciba SUMMIT, NEW JERSEY


Pyromen®
a successful new product
in the treatment of allergies and dermatoses
Pyromen is a sterile, non-protein and nonanaphylactogenic bacterial component prepared for intravenous use.
Extensive clinical tests have demonstrated the efficacy of Pyromen in the symptomatic control of allergic disorders such as hay fever and asthma—and in the treatment of skin disorders such as neurodermatitis . . . atopic dermatitis . . . chronic and acute urticaria . . . penicillin reactions with acute angioedema and urticaria . . . contact dermatitis . . . idiopathic generalized pruritus and certain endogenous eczemas.
Pyromen is a successful addition to the armamentarium of the medical profession.
Pyromen
℞ for complete information simply write "Pyromen" on your ℞ and mail to us—
Manufactured by
TRAVENOL LABORATORIES, INC.
Subsidiary of BAXTER LABORATORIES, INC.
MORTON GROVE, ILLINOIS

A New Achievement in the Control of Hypertensive Crises

*Veriloid** INTRAVENOUS

A SAFE, POWERFUL HYPOTENSIVE AGENT CAPABLE OF DROPPING THE BLOOD PRESSURE TO NORMOTENSIVE LEVELS WITHIN A MATTER OF MINUTES IN A VAST MAJORITY OF PATIENTS

An invaluable emergency drug for immediate and substantial reduction of the arterial tension

*Trademark of Riker Laboratories, Inc.

IN HYPERTENSIVE CRISES...

AN IMMEDIATE, CONTROLLABLE DROP IN ARTERIAL TENSION

VERILOID INTRAVENOUS

Veriloid Intravenous—a biologically standardized hypotensive fraction of Veratrum viride—is a new, highly potent vasorelaxing agent. Infused in proper dosage, it is capable of lowering the arterial tension through central action in a large majority of patients, regardless of the severity or nature of the hypertension. Its action is discernible in a matter of minutes, hence it is an invaluable emergency drug. After the desired blood pressure has been produced, the effect of Veriloid Intravenous can be maintained for hours or even days by intravenous infusion.

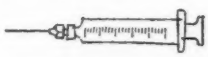
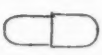
Since Veriloid Intravenous makes possible immediate reduction of both systolic and diastolic levels to normal or near-normal limits, it is indicated in the emergency treatment of hypertensive states accompanying cerebral vascular disease, malignant hypertension, hypertensive crises (encephalopathy), and hypertensive states following coronary occlusion.

Veriloid Intravenous is supplied in 5 cc. and 20 cc. ampuls, each cc. containing 0.4 mg. of Veriloid standard reference powder. Complete information regarding dosage and administration is contained in the circular which accompanies each ampul of Veriloid Intravenous. Additional literature will be promptly supplied on request.

RIKER LABORATORIES, INC., 8480 BEVERLY BLVD., LOS ANGELES 48, CALIF.

For the Common Anemias...

The Squibb **RUBRA** Family

	RUBRAMIN *per cc.*	**RUBRAFOLIN** *per capsule*	**RUBRATON** *per teaspoonful*	**RUBRAFERATE** *per capsule*
				
VITAMIN B_{12}	**15, 30 & 50** micrograms	**25** micrograms	**4.17** micrograms	**4.17** micrograms
FOLIC ACID		**1.67** milligrams	**0.28** milligrams	**0.28** milligrams
IRON			**220** milligrams ferric ammonium citrate	**130** milligrams ferrous sulfate exsic.
VITAMIN C				**50** milligrams
DOSAGE THERAPEUTIC	15 to 30 micrograms daily for a week or more; when neurologic involvement is present, 50 micrograms or more daily.	1 or 2 capsules daily	2 teaspoonfuls t.i.d.	2 capsules t.i.d.
MAINTENANCE	Generally, 30 to 50 micrograms twice a month; when neurologic involvement is present, 50 micrograms a week.	1 capsule daily	1 teaspoonful t.i.d.	1 capsule t.i.d.
SUPPLY	1 cc. ampuls, 15 & 30 micrograms of vitamin B_{12} per ampul. 5 & 10 cc. vials, 30 micrograms per cc. 10 cc. vials 50 micrograms per cc.	Bottles of 100	Pint and gallon bottles	Bottles of 100

NOTE: The above are average doses. As with all antianemia preparations, dosages must be adjusted to meet the needs of the individual patient.

Also available: Solution Rubramin Crystalline (Squibb Crystalline Vitamin B_{12} Solution) in 1 cc. ampuls, 15 micrograms of crystalline vitamin B_{12} per ampul, and 10 cc. vials, 30 micrograms of crystalline vitamin B_{12} per cc.

"RUBRAMIN" IS A REGISTERED TRADEMARK AND "RUBRAFOLIN", "RUBRATON" AND "RUBRAFERATE" ARE TRADEMARKS OF E. R. SQUIBB & SONS

SQUIBB MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

FOR THE *Stock-room* **STENO**

THE day's half gone and her energy is all gone. Pale, listless, her blood picture will probably reveal the typical IBEROL case—hypochromic microcytic anemia.

Inorganic iron is specific in such cases, but is iron alone enough?

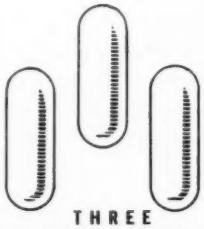
Notice the IBEROL formula. Such a formula considers that hemoglobin formation involves more than iron alone . . . that if there is a deficiency of iron, other deficiencies may also exist . . . that recovery may be more rapid and complete if other missing elements are supplied to supplement the diet.

Just three IBEROL tablets a day is the average adult dose. For prophylaxis in pregnancy and old age, one or two tablets daily are usually sufficient. Your pharmacy has IBEROL in bottles of 100, 500 and 1000. Abbott

Specify

IBEROL® *Tablets*

(Iron, B_{12}, Folic Acid, Stomach-Liver Digest, with Other Vitamins, Abbott)



THREE IBEROL TABLETS:

the average daily therapeutic dose for adults, supply:

Ferrous Sulfate (representing 210 mg. elemental iron, the active ingredient for the increase of hemoglobin in the treatment of iron-deficiency anemia)	1.05 Gm.

Plus these nutritional constituents:

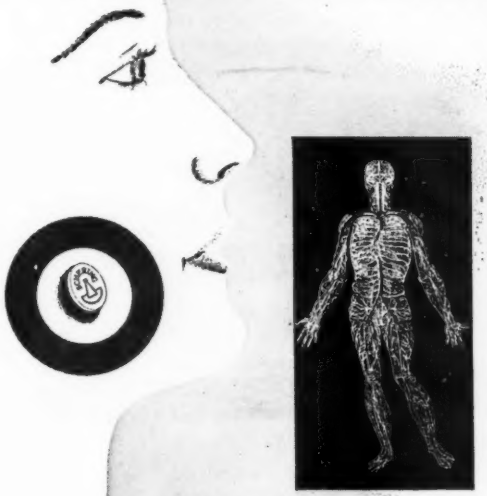
Thiamine Mononitrate (6 times MDR*)	6 mg.
Riboflavin (3 times MDR*)	6 mg.
Nicotinamide (2 times RDA†)	30 mg.
Ascorbic Acid (5 times MDR*)	150 mg.
Pyridoxine Hydrochloride	3 mg.
Pantothenic Acid	6 mg.
Vitamin B_{12}	30 mcg.
Folic Acid	3.6 mg.
Stomach-Liver Digest	1.5 Gm.

*MDR—Minimum Daily Requirement
†RDA—Recommended Daily Dietary Allowance

hormones
by the
buccal route

Optimal utilization with minimal dosage
Effectiveness approximating parenteral therapy
Convenience of administration
Economy — cost per milligram

BUCCAL TABLETS



CORTATE®
Buccal Tablets: 2 mg. Desoxycorticosterone Acetate U.S.P.

ORETON®
Buccal Tablets: 2.5, 5 or 10 mg. Testosterone Propionate U.S.P.

ORETON-M®
Buccal Tablets: 10 mg. Methyltestosterone U.S.P.

PROGYNON®
Buccal Tablets: 0.125 or 0.25 mg. Estradiol U.S.P.

PROLUTON®
Buccal Tablets: 10 mg. Progesterone U.S.P.

All Schering hormones available in Buccal Tablets are dissolved in POLYHYDROL,® a unique *solid solvent* base.

Schering CORPORATION · BLOOMFIELD, N. J.

BUCCAL TABLETS

SCHERING CORP.

the NEW therapy

in "functional G. I. distress"...

Decholin with Belladonna

Patients complaining of gastrointestinal distress without detectable organic cause are common problems in daily practice. By combining spasmolytic action with improvement in liver function, *Decholin/Belladonna* – in such cases – gives symptomatic relief by

reliable spasmolysis

hydrocholeretic flushing of biliary tract

improved blood supply to liver

mild, natural laxation without catharsis

While of special value in functional dyspepsia, *Decholin/Belladonna* is, of course, treatment of choice in biliary tract disorders for thorough and unimpeded flushing of the biliary system.

DOSAGE: One or, if necessary, two *Decholin/Belladonna* tablets three times daily after meals.

PACKAGING: *Decholin* (brand of dehydrocholic acid) *with Belladonna*, bottles of 100 tablets. Each tablet contains dehydrocholic acid 3¾ gr. and belladonna ⅛ gr. (equivalent to tincture of belladonna, 7 minims).

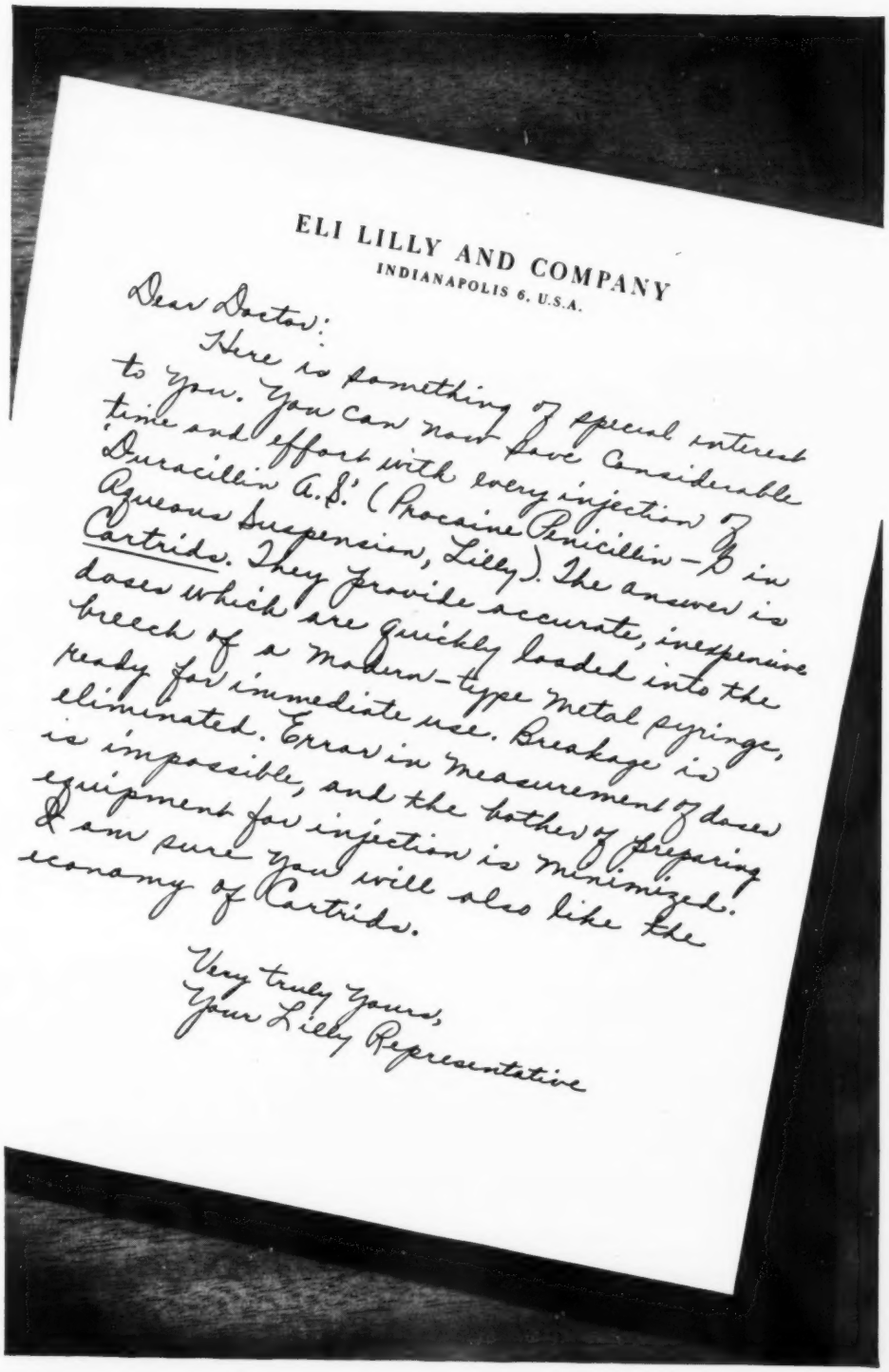
Decholin, trademark reg.

AMES

AMES COMPANY, INC., ELKHART, INDIANA

AMES COMPANY OF CANADA, LTD., TORONTO

DB-Ip



ELI LILLY AND COMPANY
INDIANAPOLIS 6, U.S.A.

Dear Doctor:

Here is something of special interest to you. You can now have considerable time and effort with every injection of Duracillin A.S. (Procaine Penicillin-G in Aqueous Suspension, Lilly). The answer is Cartrides. They provide accurate, inexpensive doses which are quickly loaded into the breech of a Modern-type metal syringe, ready for immediate use. Breakage is eliminated. Error in measurement of doses is impossible, and the bother of preparing equipment for injection is minimized. I am sure you will also like the economy of Cartrides.

Very truly yours,
Your Lilly Representative

the patient's going out

modern, refreshing, quick-acting **Theptine***

'Dexedrine'* and essential B vitamins

the unique antidepressant and nutritive "tonic"

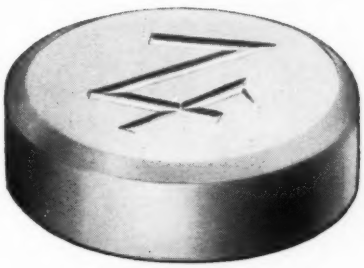
Smith, Kline & French Laboratories, Philadelphia

Each 5 cc. (1 teaspoonful) contains: 'Dexedrine' Sulfate, 2.5 mg.; thiamine hydrochloride, 5.0 mg.; riboflavin, 0.45 mg.; niacin, 6.7 mg.

Usual dosage: 1 teaspoonful t.i.d. immediately a.c. or p.c. *T.M. Reg. U.S. Pat. Off.

Cortone® TABLETS

now marked with this TRADE-MARK for Your Protection



To further protect physician, pharmacist, and patient, CORTONE Tablets will henceforth be marked with this trade-mark. As an added safeguard, all original tablet bottles will be sealed with a tamper-proof aluminum cap over a plastic snap closure. During the transition period, both plain and marked CORTONE Tablets will be in supply.

It is gratifying to report at this time that increasing supplies of Cortone are being made available. We are continuing our efforts to accomplish a steady rise in production and to maintain equitable distribution.

Literature on Request

CORTONE PRODUCT FORMS:

ORAL—Cortone Acetate Tablets, 25 mg. each, bottles of 40 tablets.

PARENTERAL—Cortone Acetate, Saline Suspension for injection, vials of 20 cc., each cc. containing 25 mg.

TOPICAL—Cortone Acetate Ophthalmic Suspension 0.5%, 5 cc. vials.
Cortone Acetate Ophthalmic Suspension 2.5%, 5 cc. vials.
Cortone Acetate Ophthalmic Ointment 1.5%, 3.5 Gm (⅛ oz.) ophthalmic tubes.

Cortone®

ACETATE

(CORTISONE Acetate Merck)

(11-Dehydro-17-hydroxycorticosterone-21-acetate)

MERCK

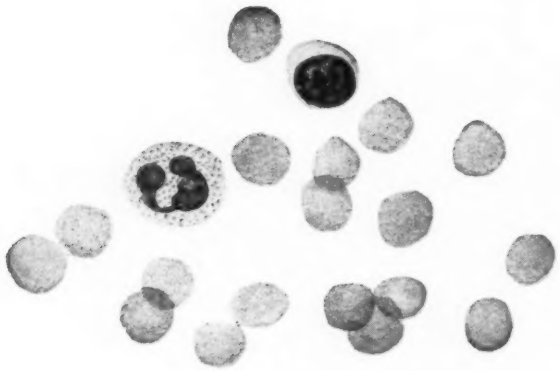
MERCK & CO., INC.

Manufacturing Chemists

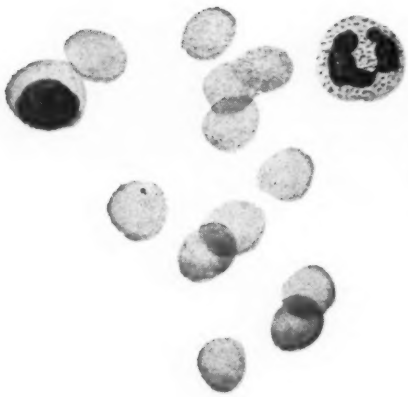
RAHWAY, NEW JERSEY

In Canada: MERCK & CO. Limited—Montreal

CORTONE is the registered trade-mark of Merck & Co., Inc. for its brand of cortisone.



8 substances



Structural and functional integrity of the normal erythrocyte depends on a wide range of substances—8 of which are encompassed in each Cebetinic* tablet:

Ferrous Gluconate	5.0 grains
Vitamin B_{12} Factors	1.0 microgram
(as determined by microbiological assay)	
Folic Acid	0.67 milligram
Thiamine Hydrochloride	2.0 milligrams
Riboflavin	2.0 milligrams
Pyridoxine Hydrochloride	0.5 milligram
Nicotinamide	10.0 milligrams
Ascorbic Acid	25.0 milligrams

For anorexia, asthenia and anemia related to: nutritional deficits; post-infection and post-surgical states; chronic blood loss; gastro-intestinal disorders of absorption; periods of rapid growth in children; puberty and pregnancy—

℞ Cebetinic

Dosage: AVERAGE ADULT — 3 tablets daily
CHILDREN—from 1 to 3 tablets daily, according to age
In bottles of 60 and 500 tablets

*Trademark

Upjohn ***Medicine...Produced with care...Designed for health***

THE UPJOHN COMPANY, KALAMAZOO, MICHIGAN

The quiet of a summer day, at the day's close:
The stillness of water, the peace, the deep repose.

the art of applying sedation constructively culminates in

Solfoton®

For continuous mild sedation without depression.

When tension and anxiety are present, as the primary complaint or expressed as somatic symptoms, Solfoton permits the prescribing of an efficient mild sedative without the use of a name suggestive therapeutically to the patient.

Formula: Phenobarbital, ¼ gr. with Sulfur (Colloidal), ⅓ gr.

Dosage: 1 tablet three or four times daily for at least two weeks.

Supplied in bottles of 100 and 500 tablets.

POYTHRESS

WM. P. POYTHRESS & CO., INC., RICHMOND 17, VIRGINIA

That's the sign for SYNTHENATE TARTRATE therapy ... for, in the early phase of coryza, this simple treatment brings gratifying, often dramatic relief.

In 65% of cases complete remission of symptoms occurs within fifteen minutes after injection of 1 cc of SYNTHENATE TARTRATE-Breon, when administered within twenty-four hours of the first sign of a cold!

Injection is simple...relatively nontoxic...prolonged in effect. SYNTHENATE TARTRATE-Breon increases cardiac efficiency and frequently slows the pulse rate; thus it is effective without appreciably increasing the work of the heart. It does not cause cardiac arrhythmias, does not stimulate the central nervous system, does not produce signs of anxiety.

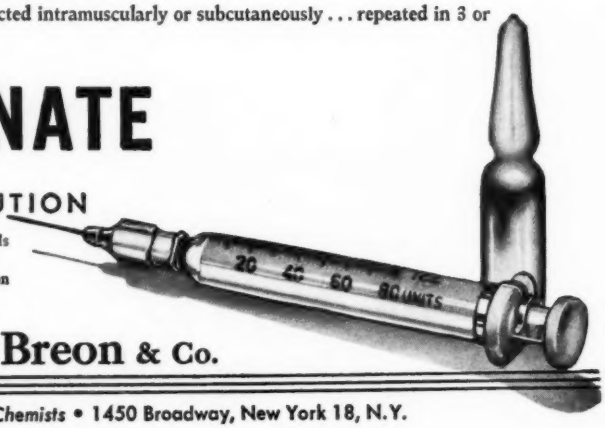
DOSAGE: 1 cc injected intramuscularly or subcutaneously ... repeated in 3 or 4 hours, if required.

SYNTHENATE

Trademark

TARTRATE SOLUTION

Available at all drug stores. 1 cc ampuls — boxes of 12 and 25.
Complete literature to physicians on request.

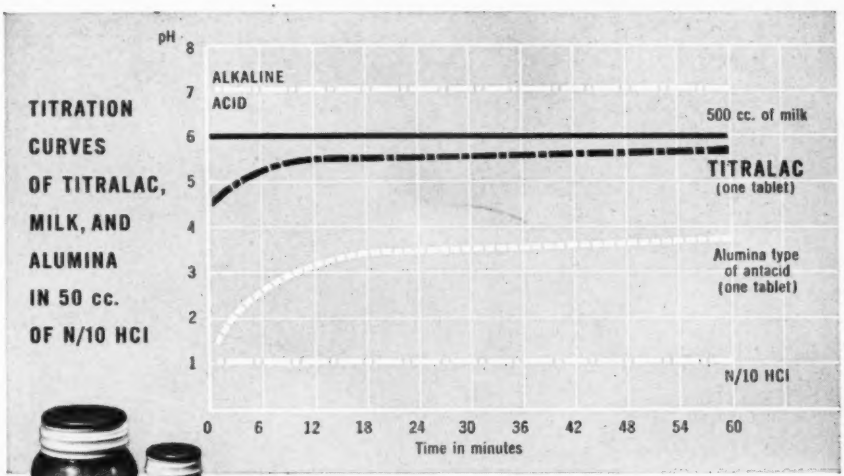


BREON

George A. Breon & Co.

Pharmaceutical Chemists • 1450 Broadway, New York 18, N.Y.

NON-SURGICAL TREATMENT



OF PEPTIC ULCER

Gastroenterologists have long endorsed the use of milk, when practicable, for its ideal acid-converting power and buffering capacity.[1, 2] In a recent comprehensive paper, Aaron[3] and others[4, 5, 6] express a preference for calcium carbonate as the antacid to be employed.

TITRALAC, by combining proper proportions of purified calcium carbonate and the amino acid glycine, *provides an acid-converting and buffering effect practically equivalent to that of fresh milk,* as shown in the above chart.* Just 1 TITRALAC tablet is equivalent to an 8-ounce glass of milk in antacid effect and provides quick and long-lasting relief from the distressing symptoms of hyperacidity.

The very agreeable taste of soft-massed TITRALAC tablets, which is achieved without employing taste-disguising, acid-generating sugars in the formula, makes them as acceptable to patients as a mint after dinner. Prescribing TITRALAC eliminates the probability of unfavorable reactions often associated with the taking of metallic-tasting, astringent tablets or liquids, and ensures adherence to the prescribed dosage.

TITRALAC tablets are supplied in bottles of 100 and convenient-to-carry packages of 40. TITRALAC powder is also available, in 4-oz. jars.

REFERENCES

1. Rossett, N. E., and Flexner, J.: Ann. Int. Med. 18: 193 (1944). 2. Freezer, C. R. E.; Gibson, C. S., and Matthews, E.: Guy's Hosp. Reports 78: 191 (1928). 3. Aaron, A. H.; Lipp, W. F., and Milch, E.: J. A. M. A. 139: 514 (Feb. 19) 1949. 4. Kirsner, J. B., and Palmer, W. L.: Illinois M. J. 94: 357 (Dec.) 1948. 5. Kimball, S.: in Practice of Medicine (Tice). Hagerstown, Md., W. F. Prior Company, Inc., 1948; p. 210. 6. Special Article: M. Times 76: 10 (Jan.) 1948.

* The formula of TITRALAC is one whose composition and mode of action are recognized by U.S. Patent No. 2,429,596.

Samples and literature to physicians upon request.

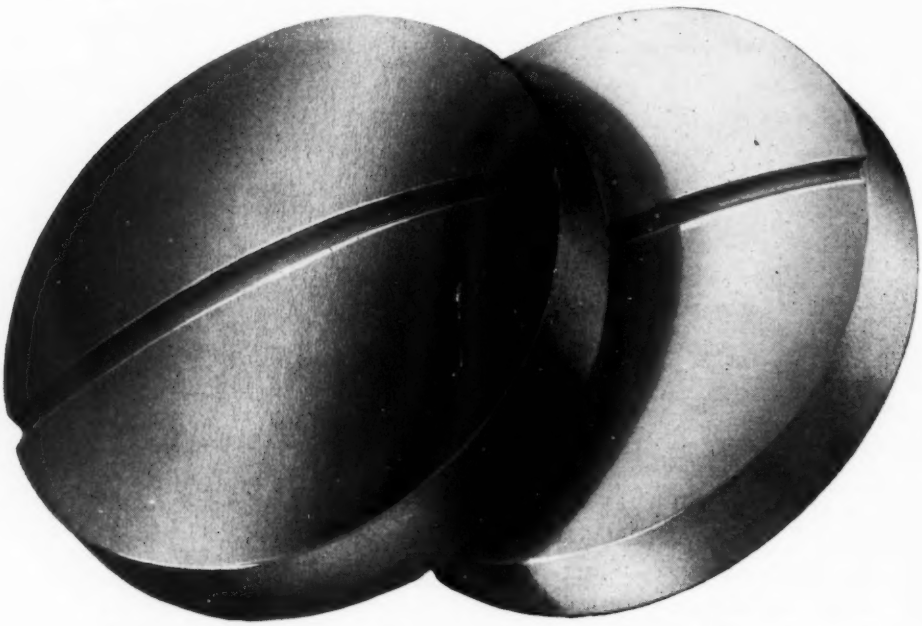
SCHENLEY LABORATORIES, INC., 350 FIFTH AVENUE, NEW YORK 1, N. Y.

©Schenley Laboratories, Inc.

NOW

2 Banthine Dosage Forms:

THE TRUE ANTICHOLINERGIC IN PEPTIC ULCER IS NOW AVAILABLE AS:



Banthine *and* Banthine with Phenobarbital

"More and more importance is being attached to the role of hypermotility of the stomach in the causation of ulcer pain and less to the influence of simple hyperacidity.

"Banthine studies have demonstrated that while it does lower gastric acidity in most patients, its most important function is this same decrease in hypermotility with almost immediate relief of pain."*

DOSAGE FORMS:

Banthine (50 mg.), scored tablets.

Banthine (50 mg.) with Phenobarbital (15 mg.), scored tablets.

*Editorial: Promise in Peptic Ulcer, West. J. Surg. *58*:445 (Aug.) 1950.

Banthine®

BROMIDE

BRAND OF METHANTHELINE BROMIDE

•

SEARLE *RESEARCH IN THE SERVICE OF MEDICINE*

PAIN

Full Codeine Effects...

on **Small** Codeine Dosage

By utilizing the principle of synergistic enhancement in its fullest logical form, Phenaphen with Codeine provides *high* analgesia and sedation on relatively *low* codeine dosage, with reduced side-effects. The analgesics (aspirin 2½ gr. and phenacetin 3 gr. per capsule) and sedative (phenobarbital ¼ gr.) effectively potentiate a small dosage of codeine (either ¼ or ½ gr.). And the addition of the spasmolytic hyoscyamine (0.031 mg.) —to implement the analgesic-sedative action, and to help counteract any tendency to nausea or constipation so often provoked by codeine medication—provides a combination that has "proved practically always successful" for patients with steady pain.

ANXIETY

the Pain Reaction is a State of Mind

PHENAPHEN
(Brown and White Capsules)
Standard formula

•

PHENAPHEN NO. 2
(Yellow and Black Capsules)
Phenaphen with Codeine Phosphate ¼ Gr.

•

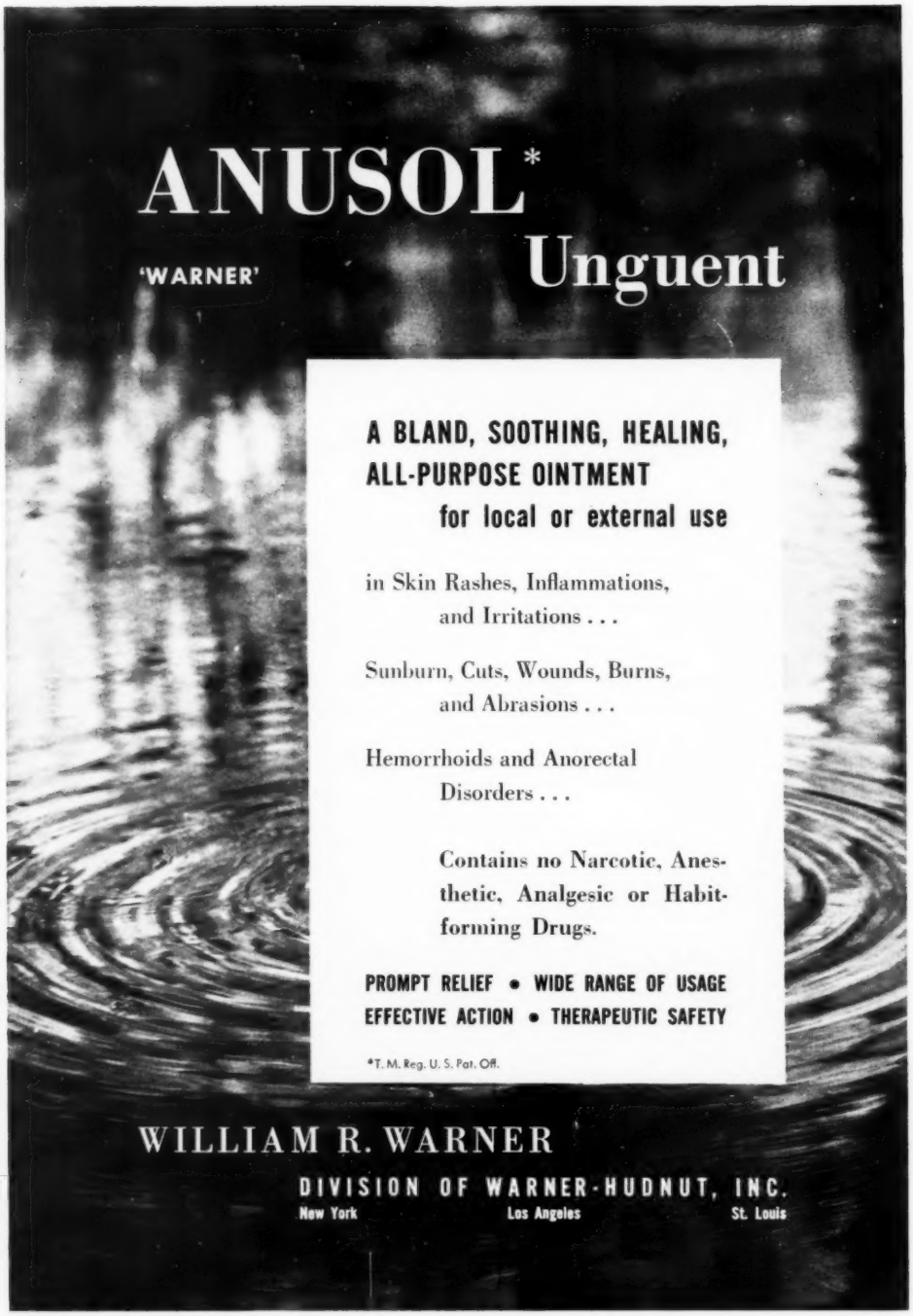
PHENAPHEN NO. 3
(Green and Black Capsules)
Phenaphen with Codeine Phosphate ½ Gr.

INSOMNIA

Phenaphen® with Codeine

A. H. ROBINS COMPANY, INC.
RICHMOND 20, VIRGINIA

Robins


ANUSOL*
'WARNER'
Unguent
A BLAND, SOOTHING, HEALING,
ALL-PURPOSE OINTMENT
for local or external use
in Skin Rashes, Inflammations,
and Irritations . . .
Sunburn, Cuts, Wounds, Burns,
and Abrasions . . .
Hemorrhoids and Anorectal
Disorders . . .
Contains no Narcotic, Anesthetic, Analgesic or Habit-forming Drugs.
PROMPT RELIEF • WIDE RANGE OF USAGE
EFFECTIVE ACTION • THERAPEUTIC SAFETY
*T. M. Reg. U. S. Pat. Off.
WILLIAM R. WARNER
DIVISION OF WARNER-HUDNUT, INC.
New York
Los Angeles
St. Louis

newly recognized palatable source of

POTASSIUM

... the neglected mineral

Appreciation of potassium-depleted states is comparatively new. The importance of a normal potassium-ion balance in the body is often overlooked.

Maintenance of the electrolyte balance, osmotic pressure of the body fluids and normal cardiac rhythm and rate is impossible when the total of potassium-ions is below a critical level.

A common avenue of potassium-ion loss is through increased urinary excretion during fever.

Valentine's Meat Extract, with its high content of soluble potassium salts (equivalent to 74-97 mg. KCl per cc.) together with other inorganic salts, meat bases and small amounts of soluble proteins is a valuable dietary supplement, furnishing practical amounts of potassium in palatable form.

Valentine Company, Inc., Richmond, Va.

References...

J. Clin. Endocrin. 9,691 (1949).
Postgraduate Medicine, 6,419 (1949).
Current Medical Digest, Dec., 1949.
Trans. of Conference on Metabolic Aspect of Convalescence, 17th Meeting, Josiah Macy, Jr. Foundation, New York, Mar. 29-30, 1948.

Valentine's
PREPARATION
MEAT EXTRACT

more effective against

tinea capitis

"More effective in ringworm of the scalp than any other topical agent."[1]

tinea pedis

In "athlete's foot" a combined cured and improved rate of 95% has been obtained.[1]

Also indicated in

tinea corporis
tinea cruris
tinea versicolor
tinea of the nails

"broad antifungal spectrum ...good cutaneous tolerance."[1]

New!

Asterol® *dihydrochloride*

5% tincture . . . ointment . . . powder . . . sprayed, applied with cotton or dusted on

'Roche'

1. Stritzler, C.; Fishman, I. M., and Laurens, S.: *Transactions New York Acad. Sc., 13*:31, Nov., 1950.

HOFFMANN-LA ROCHE INC • ROCHE PARK • NUTLEY 10 • NEW JERSEY

ASTEROL DIHYDROCHLORIDE 'ROCHE'—BRAND OF DIAMTHAZOLE DIHYDROCHLORIDE [2-DIMETHYLAMINO-6-(β-DIETHYLAMINO ETHOXY)-BENZOTHIAZOLE DIHYDROCHLORIDE]

a practical *step forward* in the therapy of rheumatic affections

Pabalate usually provides better therapy for rheumatic affections than pure salicylate itself, through its mutually synergistic combination of para-aminobenzoic acid and salicylate.[1,2] Reports of authoritative clinical tests show a *higher* degree of pain relief... to *more* patients... on *lower* dosage... over *longer* periods... with *greater freedom* from adverse reactions.[3]

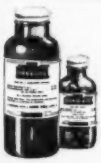
REFERENCES: 1. Dry, T. J. et al.: Proc. Staff Meetings Mayo Clin., 21:497, 1946. 2. Hoagland, R. J.: Am. J. Med., 9:272, 1950. 3. Smith, R. T.: J. Lancet, 70:192, 1950.

FORMULA: Each enteric-coated tablet or each teaspoonful of chocolate-flavored liquid contains 0.3 Gm. (5 gr.) sodium salicylate U.S.P., and 0.3 Gm. (5 gr.) para-aminobenzoic acid (as the sodium salt).

A. H. ROBINS CO., INC.
RICHMOND 20, VA.

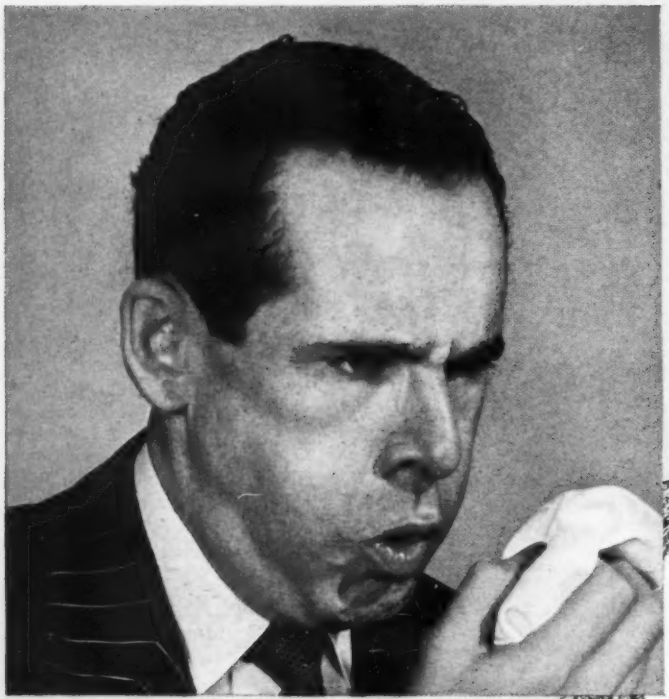
Robins **Pabalate®**

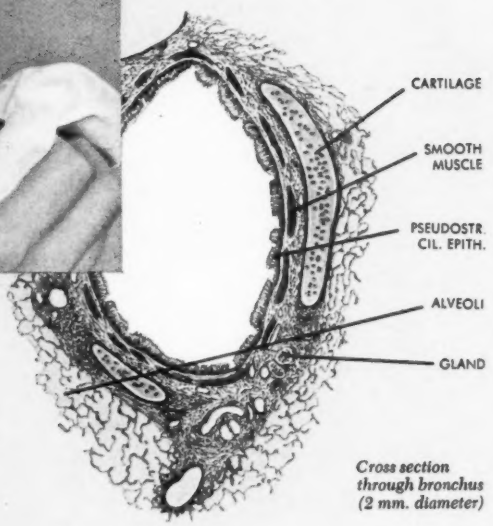
Also available as Pabalate Sodium-Free for cases in which sodium is contraindicated



Seven Years' Research that opened a **New Era**

in Cough Therapy





Cross section through bronchus (2 mm. diameter)

The time encrusted *empirical* approach to cough therapy—with its "picture of confusion, contradiction and neglect"[2]—can now be replaced by sound, *rational* non-narcotic treatment, thanks to the pioneering studies of Boyd et al.,[1,2] demonstrating that glyceryl guaiacolate is the most powerful of expectorants commonly used. Robitussin—the antitussive-expectorant with specific drug action—provides glyceryl guaiacolate for increasing respiratory tract fluid, together with desoxyephedrine, for its bronchial-spasm-relieving[3] and its mood-improving actions—in an aromatic syrup that is highly patient-acceptable.

A. H. ROBINS CO., INC. • RICHMOND 20, VA.

Robitussin®

promotes useful cough... minimizes harmful cough

References:

1. Boyd, E. M. and Lapp, S.: J. Pharmacol. and Exper. Therap., 87:24, 1946. **2.** Connell, W. F. et al.: Canad. M.A.J., 42:220, 1940. **3.** Novelli, A. and Tainter, M. L.: J. Pharmacol., 77:324, 1943.

Formula:

Each 5 cc. (1 teaspoonful) contains 100 mg. glyceryl guaiacolate and 1 mg. desoxyephedrine hydrochloride, in a palatable aromatic syrup.

to ameliorate mood...

to relieve inner tension

'DEXAMYL'—a balanced combination of 'Dexedrine'* and amobarbital—provides the beneficial effects of both its two components: The 'Dexedrine', because of its "smooth" and profound antidepressant action, restores mental alertness and optimism and dispels psychogenic fatigue. The amobarbital, because of its calming action, relieves nervous tension, anxiety and agitation.

Combined in DEXAMYL, the two components work together synergistically to control troublesome symptoms of mental and emotional distress. Each tablet contains 'Dexedrine' Sulfate (dextro-amphetamine sulfate, S.K.F.), 5 mg.; and amobarbital (Lilly), ½ gr. (32 mg.)

Smith, Kline & French Laboratories, Philadelphia

Dexamyl*

*T.M. Reg. U.S. Pat. Off.

"...completely amenable to cure"

"Vitamin deficiency diseases . . . with the exception of a few extreme instances are completely amenable to cure."*

When a vitamin deficiency state exists—as may be the case in old age, with restricted diets, during convalescence, certain chronic illnesses, pregnancy—intensive vitamin therapy may be effectively instituted with

PLURAXIN®

SPECIAL THERAPEUTIC FORMULA

High Potency Multiple Vitamin Capsules:

Vitamin A	25,000 units
Vitamin B_1 (thiamine)	15 mg.
Vitamin B_2 (riboflavin)	10 mg.
Vitamin B_6 (pyridoxine)	2 mg.
Calcium pantothenate	10 mg.
Nicotinamide	150 mg.
Vitamin C (ascorbic acid)	150 mg.
Vitamin D_2 (calciferol)	1,000 units

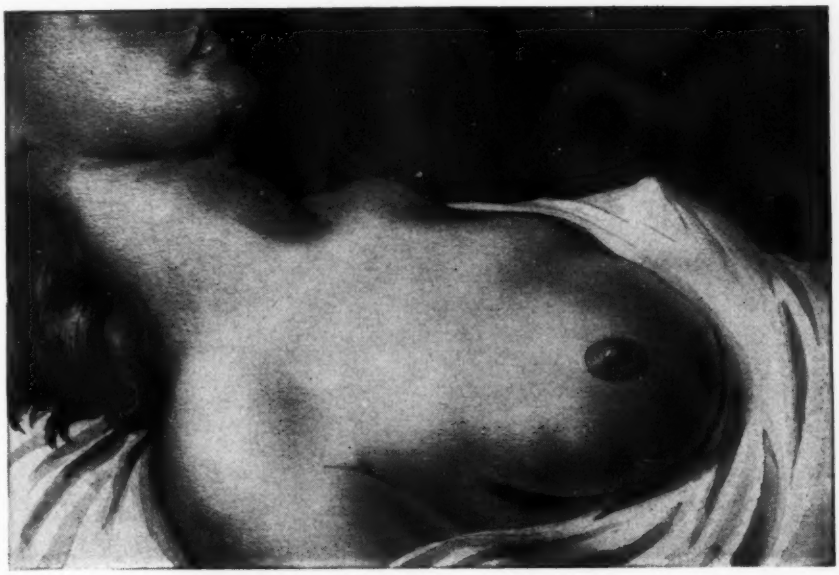
One or two capsules of PLURAXIN *daily usually suffice.*

Available in bottles of 30 and 100 capsules.

*Wilbur, D. L.: Principles in the Use of Vitamins in Treatment: I. Vitamin Deficiency Diseases. Gastroenterology, 1:179, Feb., 1943.

Winthrop-Stearns INC.
NEW YORK, N. Y. WINDSOR, ONT.

PLURAXIN, trademark reg. U. S. & Canada



in postpartum mastitis: In 6 out of 7 cases Terramycin-treated, temperatures fell to normal within 72 hours. In 3 cases not initially requiring drainage, healing occurred without surgery in the first after 3 days of therapy; in the second, a fluctuant area developed in 24 hours and was excised; in the third case, the area became fluctuant after 5 days and was drained.

Wright, L. T.; Parker, J. W.; Allen, F. R., and Beinfield, M. S.: Antibiotics & Chemotherapy 1:165 (June) 1951.

CRYSTALLINE TERRAMYCIN HYDROCHLORIDE

available | *Capsules, Elixir, Oral Drops, Intravenous, Ophthalmic Ointment, Ophthalmic Solution.*

ANTIBIOTIC DIVISION **Pfizer** CHAS. PFIZER & CO., INC., *Brooklyn 6, N. Y.*

Made from the *leaf*—

Always
WAS, IS and
WILL BE
Dependable
in digitalization
and its maintenance

The physician
can always
rely on

Pil. Digitalis (Davies, Rose)
0.1 Gram (approx. 1½ grains)

These certain qualities can be positively identified—

Comprise the entire properties of the leaf of Digitalis

Physiologically Standardized

Each Pill is equivalent to one U. S. P. Digitalis Unit

Clinical samples and literature sent to physicians on request

Davies, Rose & Company, Limited Boston 18, Mass.

PHARMACEUTICAL MANUFACTURERS

D23

complementary...

wherever combined estrogen-androgen therapy is indicated

i.e. In fractures and osteoporosis in either sex to promote bone development, tissue growth and repair.

i.e. In the female climacteric in certain selected cases.

i.e. In dysmenorrhea in an attempt to suppress ovulation on the basis that anovulatory bleeding is usually painless.

i.e. In the male climacteric to reduce follicle-stimulating hormone levels.

"PREMARIN"® with METHYLTESTOSTERONE

A steroid combination which permits utilization of both the complementary and the neutralizing effects of estrogen and androgen when administered concomitantly. Thus certain properties of either sex hormone may be employed in the opposite sex with a minimum of side effects. Each tablet provides estrogens in their naturally occurring, water-soluble, conjugated form expressed as sodium estrone sulfate, together with methyltestosterone.

No. 879—Conjugated estrogens equine ("Premarin") . . . . 1.25 mg.
Methyltestosterone . . 10.0 mg.
Bottles of 100 tablets (yellow)

No. 878—Conjugated estrogens equine ("Premarin") . . . . 0.625 mg.
Methyltestosterone . . 5.0 mg.
Bottles of 100 tablets (red)

Ayerst

Ayerst, McKenna & Harrison Limited
New York, N.Y. Montreal, Canada

5125

In a matter of minutes...

GRATIFYING RELIEF

with PYRIDIUM®

from the distressing symptoms of pain, burning, urgency and frequency which accompany UROGENITAL INFECTIONS.

Pyridium may be administered together with antibiotics, the sulfonamides, or other specific therapy to provide the dual approach of symptomatic relief and anti-infective action.

SUPPLY:

FOR ORAL USE—
Bottles containing 50 and tubes containing 12—0.1 Gm. (1½ grains) tablets.

FOR LOCAL USE—
Bottles containing 100 cc. of a 1% Solution (may be diluted, if necessary). Solution also may be used to prepare suitable dilutions for infants and young children, for peroral use.

PYRIDIUM®

(Brand of Phenylazo-diamino-pyridine HCl)

Pyridium is the trade-mark of Nepera Chemical Co., Inc., successor to Pyridium Corporation, for its brand of phenylazo-diamino-pyridine HCl. Merck & Co., Inc. sole distributor in the United States.

MERCK & CO., INC.
Manufacturing Chemists
RAHWAY, NEW JERSEY
In Canada: MERCK & CO. Limited—Montreal

"The value of sulfonamide mixtures in reducing crystalluria and renal complications is based on

undisputed experimental evidence

"It has been confirmed by several independent groups of investigators in rigorous practical tests at the bedside."
(Lehr, D.: J.A.M.A., Feb. 5, 1949.)

for safer, more effective, speedier, highly palatable sulfonamide therapy

tri-sulfanyl

Each 5 cc. of syrup (approx. one teaspoonful) ...or each tablet contains 7½ grains of sulfa compound	
SULFADIAZINE	0.162 Gm.
SULFAMERAZINE	0.162 Gm.
SULFATHIAZOLE	0.162 Gm.
SODIUM CITRATE*	0.375 Gm.

*not contained in Tri-Sulfanyl Tablets

Samples of Tri-Sulfanyl on request.

CASIMIR FUNK LABORATORIES, INC.
affiliate of U. S. Vitamin Corporation
250 East 43rd Street, New York 17, N.Y.

superior decongestion—

no excitation...no wakefulness

Clinically proved Benzedrex Inhaler provides remarkably rapid, complete and prolonged shrinkage of the nasal mucosa. Its volatile form helps it open ducts and ostia which are frequently inaccessible to liquid forms of nasal medication.

Moreover, Benzedrex Inhaler may be freely used even by those individuals in whom such ephedrine-like effects as insomnia, restlessness, or nervousness are frequently encountered.

For use between treatments in your office, suggest this superior Inhaler to your next patient with nasal congestion.

Smith, Kline & French Laboratories
Philadelphia

Benzedrex* **Inhaler**

the best inhaler ever developed

*T.M. Reg. U.S. Pat. Off.

the Fallacy of the Balanced Diet

"Deficiency diseases tend to be multiple and it should not surprise you that people eating at the same table may all have deficiency diseases; the surprising thing is that one may have one deficiency disease, while another person may have an entirely different disease.[1]"

1. Spies, Tom D.: Recent Progress In Nutrition, Postgraduate Med., 6:97, August, 1949.

Vi terra — *all in a single capsule*

Cobalt	0.1 mg.	Vitamin A	5,000 U.S.P. Units
Copper	1 mg.	Vitamin D	500 U.S.P. Units
Iron	10 mg.	Thiamine HCl	3 mg.
Iodine	0.15 mg.	Riboflavin	3 mg.
Calcium	213 mg.	Pyridoxine HCl	0.5 mg.
Manganese	1 mg.	Niacinamide	25 mg.
Magnesium	6 mg.	Ascorbic Acid	50 mg.
Molybdenum	0.2 mg.	Pantothenate	5 mg.
Phosphorus	165 mg.	Tocopherols, Type IV	5 mg.
Potassium	5 mg.		
Zinc	1.2 mg.		

Available at prescription pharmacies . . . supplied in bottles of 100 capsules

J. B. ROERIG AND COMPANY Roerig Rx 536 LAKE SHORE DRIVE, CHICAGO 11, ILL.

almost

a quarter

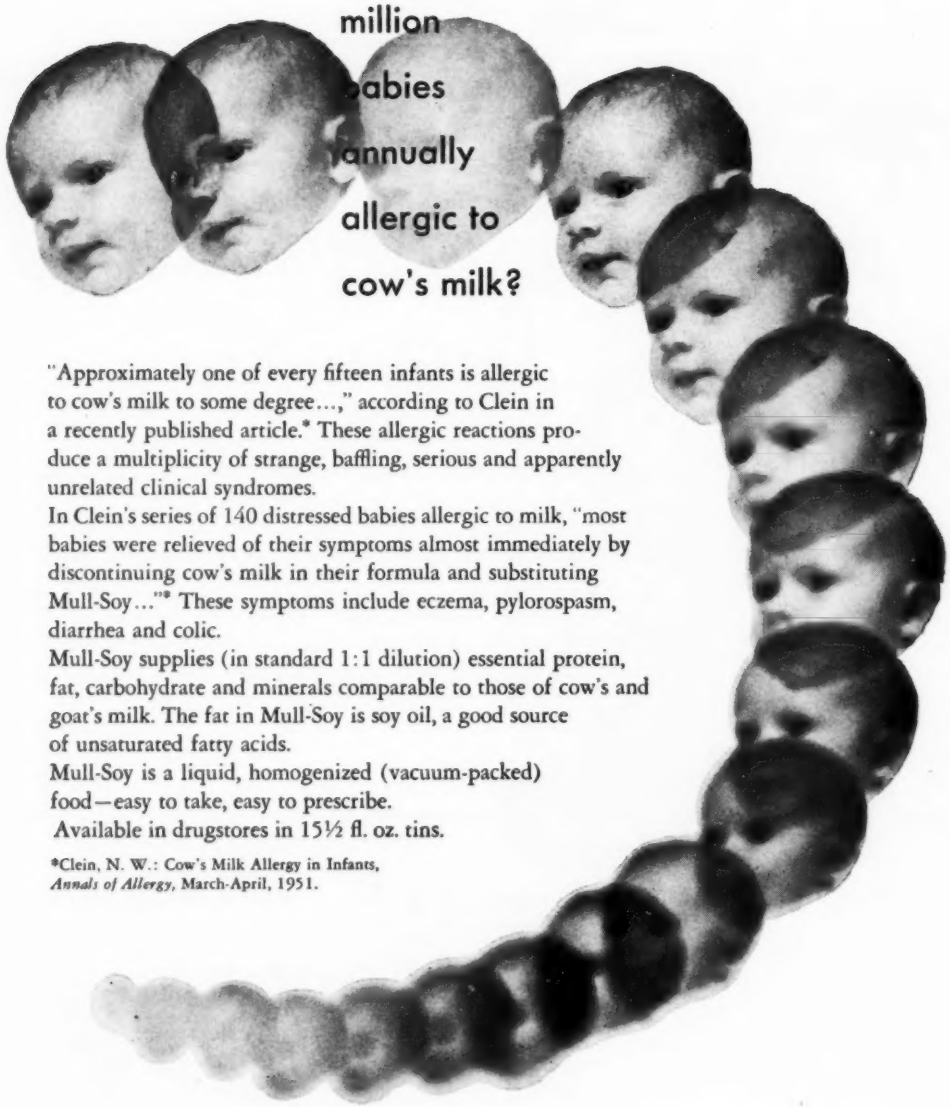
million

babies

annually

allergic to

cow's milk?



"Approximately one of every fifteen infants is allergic to cow's milk to some degree...," according to Clein in a recently published article.* These allergic reactions produce a multiplicity of strange, baffling, serious and apparently unrelated clinical syndromes.

In Clein's series of 140 distressed babies allergic to milk, "most babies were relieved of their symptoms almost immediately by discontinuing cow's milk in their formula and substituting Mull-Soy..."* These symptoms include eczema, pylorospasm, diarrhea and colic.

Mull-Soy supplies (in standard 1:1 dilution) essential protein, fat, carbohydrate and minerals comparable to those of cow's and goat's milk. The fat in Mull-Soy is soy oil, a good source of unsaturated fatty acids.

Mull-Soy is a liquid, homogenized (vacuum-packed) food—easy to take, easy to prescribe.

Available in drugstores in 15½ fl. oz. tins.

*Clein, N. W.: Cow's Milk Allergy in Infants, *Annals of Allergy*, March-April, 1951.

Mull-Soy first in

hypoallergenic diets for infants, children and adults

The **Borden** Company, Prescription Products Division, 350 Madison Avenue, New York 17

NEW

THERAPY

FOR

SINUSITIS

RHINITIS

Reasons for the clinical effectiveness of Furacin include: a wide antibacterial spectrum, including many gram-negative and gram-positive organisms — effectiveness in the presence of wound exudates — lack of cytotoxicity: no interference with healing, phagocytosis or ciliary action — water-miscible vehicles which dissolve in exudates — low incidence of sensitization: less than 5% — ability to minimize malodor of infected lesions — stability.

Contains Furacin 0.02% brand of nitrofurazone N.N.R. and ephedrine • HCl 1% in an isosmotic, aqueous vehicle.

Furacin® Nasal
with ephedrine

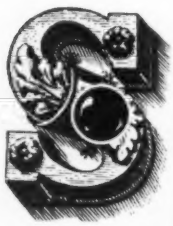
Excellent results are being obtained with Furacin Nasal in cases of acute and chronic sinusitis and rhinitis. It is being administered by dropper, atomizer, cannula or the displacement technic.

Even those notoriously refractory conditions: atrophic rhinitis and ozena* show marked benefits from Furacin therapy.

*Thornell, W. C.: Arch. Otolaryng. 52:96 (July) 1950.

Literature on request

E·A·T·O·N LABORATORIES Inc.
NORWICH, NEW YORK



ugar-coated for dependable diuresis

Sugar coating is one reason for the superiority of Tablets MERCUHYDRIN with Ascorbic Acid.

Maximum absorption of mercury occurs in the stomach and duodenum—too high for enteric-coated tablets. But poorly tolerated oral mercurials *must be* enteric-coated. Only well-tolerated Tablets MERCUHYDRIN with Ascorbic Acid can be sugar-coated . . . give consistently greater diuresis with less mercury.

For dependable diuresis and minimal side effects prescribe

tablets

MERCUHYDRIN®

with ascorbic acid

The simplest method of outpatient maintenance

dosage: One or two tablets daily, morning or evening, preferably after meals.

available: Bottles of 100 simple sugar-coated tablets each containing meralluride 60 mg. (equivalent to 19.5 mg. of mercury) and ascorbic acid 100 mg.

To secure the greatest efficacy and all the advantages of Tablets MERCUHYDRIN with Ascorbic Acid, prescribe a three-week initial supply . . . 25 to 50 tablets.

M-15

Lakeside Laboratories, INC., MILWAUKEE 1, WISCONSIN

The blood-building,
appetite-building
iron tonic
with B12 activity
plus . . . iron (ferrous gluconate) in tonic quantities
plus . . . essential B complex vitamins well in excess of known minimum daily requirements
plus . . . pleasant taste, too
ELIXIR
CAPSULES
BETA-CONCEMIN FERRATED
IRON-B COMPLEX WITH B12 ACTIVITY
Beta-Concemin ®
Merrell
1828
New York • CINCINNATI • Toronto

When the diagnosis is Pyelitis

First: consider

ACCEPTED
COUNCIL ON
PHARMACY
AND
CHEMISTRY

to establish and maintain urinary antisepsis...

To establish and maintain urinary antisepsis, MANDELAMINE* is many times preferred because it is quickly effective against the organisms most commonly encountered in urinary-tract infections. Its exceptional freedom from untoward reactions and its wide range of antibacterial activity commend it for use as soon as the diagnosis has been made.

Urinary antisepsis is often achieved in uncomplicated pyelitis in as few as three days. Speedy recovery is thus secured in many cases without necessitating higher-cost therapy.

Other indications for MANDELAMINE are cystitis, prostatitis, pyelonephritis, nonspecific urethritis, and infections associated with urinary calculi or neurogenic bladder; also valuable for pre- and postoperative prophylaxis in urologic surgery.

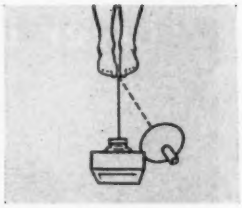
Renal insufficiency is the only major contraindication to MANDELAMINE therapy.

MANDELAMINE is available in bottles of 120, 500, and 1,000 enteric-coated tablets, through all prescription pharmacies. Comprehensive literature and samples for clinical trial will be furnished to physicians on request.

NEPERA

NEPERA CHEMICAL CO., INC.
Pharmaceutical Manufacturers
NEPERA PARK, YONKERS 2, N. Y.

*MANDELAMINE is the registered trademark of Nepera Chemical Co., Inc., for its brand of methenamine mandelate.



Single light at camera, level with camera lens.

Picture the patient

...on transparencies

To fill files quickly with material in the most useful form for presentation and discussion, make it a practice to photograph the significant visual aspects of all noteworthy cases . . . on miniature (135 or 828) Kodachrome Film, for 2x2-inch slides.

Then, to present such material with maximum effectiveness, use a Kodaslide Projector, Master Model. Versatile and simple to operate, it takes lamps of wattage from 300 to 1000 and can be fitted with the choice of 4 *Lumenized* Kodak Projection Ektar and Kodak Ektanon Lenses . . . thus it produces images with superb edge-to-edge brilliance and color accuracy, in the smallest room or the largest auditorium.

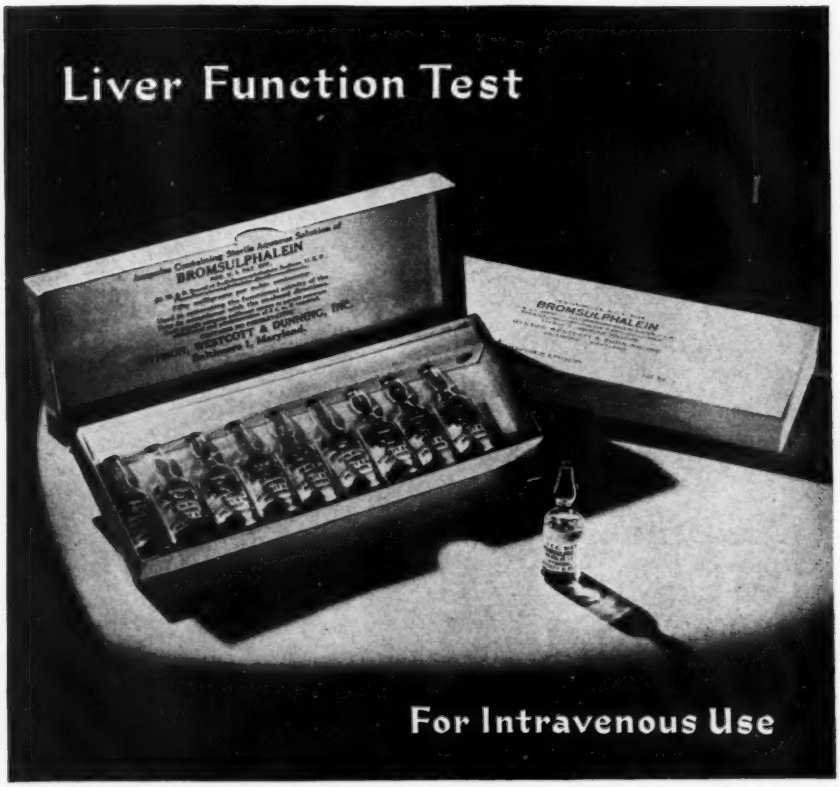
For further information about Kodaslide Projector, Master Model, as well as Kodaslide Projectors, 2A and Merit, and Kodaslide Table Viewers, A and 4X . . . see your photographic dealer . . . or write to Eastman Kodak Company, *Medical Division*, Rochester 4, N. Y.

Kodak Products for the Medical Profession include:

X-ray film, screens, and chemicals; electrocardiographic papers and film; cameras and projectors—still- and motion-picture; photographic film—full-color and black-and-white (including infrared); photographic papers; photographic processing chemicals; microfilming equipment and microfilm.

Serving medical progress through Photography and Radiography

Kodak



Bromsulphalein Sodium

BROMSULPHALEIN SODIUM SOLUTION* is used as a test of liver function, especially in suspected cases of cirrhosis, malignancy, hepatitis, obstructive and arensical jaundice. Normally the dye is removed rapidly from the blood stream by the liver, but in the presence of hepatic disease it is eliminated more slowly. The test is performed by injecting intravenously a test dose, after which the amount of dye retained in the blood is estimated colorimetrically by withdrawing a specimen of blood for comparison with a set of standards.

BROMSULPHALEIN SODIUM is supplied in 3 cc. size ampules containing a 5% sterile aqueous solution, packaged in boxes of 10. Colorimeter standards prepared from permanent dyes are a'so available.

Complete literature on request.

**H. W. & D. Brand of Sulfobromophthalein-sodium, U. S. P.*

HYNSON, WESTCOTT & DUNNING, INC.
BALTIMORE 1, MARYLAND
HW&D

SOUTHERN MEDICAL JOURNAL

JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

PUBLISHED MONTHLY BY THE SOUTHERN MEDICAL ASSOCIATION AT BIRMINGHAM, ALA.

Volume 44 OCTOBER 1951 Number 10

PHYSICAL TREATMENT IN INTERNAL MEDICINE*

By SEDGWICK MEAD, M.D.
St. Louis, Missouri

The purpose of this presentation is to list briefly those conditions most frequently met in internal medicine in which the patient can benefit from physical therapy. I shall stress prophylaxis of certain disabilities and also careful and physiologic use of available physical agents.

Periarthritis and Shoulder-Hand Syndrome.—Recent writers have stressed the frequency of this affection following myocardial infarction.[1] It has been suggested that when myocardial infarction has been diagnosed, stiffening of the shoulder should always be looked for, and vice versa. Much emphasis has been placed on autonomic blockade (stellate blocks, sympathectomy). Physical therapy is usually described as valueless.

The important point here is early recognition and prevention. The late frozen shoulder and claw hand are refractory to any form of treatment. If when you visit your bed patients you will add to the usual examination a quick determination of joint range in both shoulders, you will be in for some surprises. Whenever there is combined immobilization and pain you have the setting for shoulder-hand syndrome. Severe pain of arm, forearm, neck, or chest enforces splinting and immobilization. Immobilization by itself (as in using an arm sling) soon begets pain in the subdeltoid region. The resulting disability may be more disastrous in treatment bills and loss of time from work than a gallbladder operation.

Sudden acute onset of severe pain and tenderness in the region of the greater tuberosity suggests a degenerative tendinitis of the supraspinatus tendon. Since this tendon forms part of the floor of the subacromial bursa, an acute sterile inflammation results, with fixation of the shoulder girdle. If neglected, these guarding reactions pass over later into the stage of contracture. When the patient is seen during the first week, a golden opportunity is at hand. Roentgen treatment is imperative, accompanied by gentle stroking massage, liberal use of analgesics, gentle active assistive motions of the limb daily through a tolerated range of motion, perhaps a temporary sling. Diathermy and other forms of heat are usually avoided during x-ray treatment.

Case 1.—A 59-year-old housewife had sudden, dramatic onset of severe pain in the left shoulder. There was no history of trauma or other illness. The general physical and laboratory examinations were within normal limits except for the left shoulder. There was severe point tenderness over the subacromial bursa without heat, redness, swelling, or muscle atrophy. Glenohumeral motion was virtually impossible in any plane because of pain. Roentgenograms of both shoulders significantly showed fluffy calcification only in the right supraspinatus insertion, suggesting the latent, generalized nature of the disease. The patient began x-ray treatment to the deltoid region the same day, receiving 3 doses of 133 r. each, on alternate days. Physical therapy, as outlined above, was given concurrently. At the end of seven days she was completely free of pain, had normal range of motion, and normal strength.

Nearly as good results are obtained with x-ray treatment alone, but recovery of joint range and complete strength and endurance are delayed several weeks.

Case 2.—A 41-year-old housewife had a history of onset identical with *Case 1.* Films showed calcium deposits in the supraspinatus tendon. X-ray treatment produced the same early relief of pain. However *Case 2,* being a physician's wife, did not get as good treatment as *Case 1.* Although free of pain, she did not recover complete strength in the shoulder abductors for more than a month after onset. *Fig. 1* shows, in electromyographic tracings from both deltoids, evidence of central inhibition of muscle by a neighboring painful process. Both deltoids are making maximal effort.

One should treat persisting weakness of this kind with progressive resistance exercise, which can easily be carried out at home with rented equipment.

*Read in Section on Physical Medicine and Rehabilitation, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

†From the Division of Physical Medicine, Washington University School of Medicine, St. Louis.

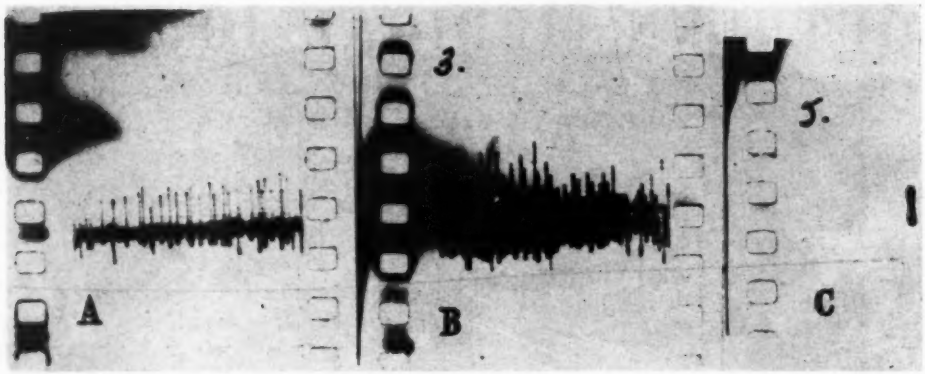


Fig. 1

Case M. M.—Acute subacromial (calcified) bursitis with paresis of deltoid, right. (A) Right middle deltoid, maximum abduction (limited to 25-30°); (B) left middle deltoid, abduction against maximum resistance; and (C) calibration, 2,000 microvolts. 4/12/50.

Involvement of the hand begins with dependent edema from lack of muscle pump action to empty the veins. The process is identical whether the cause of the immobilization be a fracture of the radius, myocardial infarction, brachial plexitis, or hemiplegia. Motion is at first restricted by the water-filled-glove effect of edema. Soft edema is later transformed into hard, non-pitting swelling, accompanied by skin atrophy and hyperesthesia. Finally muscle contracture is added to soft tissue changes and bone atrophy. The full blown shoulder-hand picture is essentially a geriatric phenomenon. Treatment consists of dogged fractional manipulation when necessary aided by intravenous procaine or ACTH or cortisone to control pain, supplemented by active exercises and home occupational therapy carried out by the patient. In addition to the traditional circumduction exercises and wall-climbing with the fingers, the patient can be taught the use of towels and broomsticks behind the back to bring back internal rotation. A simple shoulder wheel can be constructed from a 2 x 4 plank bolted loosely to the garage wall with a wooden handle which can be moved successively outward as joint range increases. The other end of the 2 x 4 can be counterweighted to give increased resistance.

Manipulation under general anesthesia may have to be carried out in certain neglected cases. It may result in multiple small hemorrhages and capsular tearing. Unless almost hourly passive exercises are given, under liberal morphine medication, for the next 48 hours, the patient will revert quickly to his previous status. Surgical curettage of the rotator cuff tendons or excision of the entire bursa may have to be carried out in persons with multiple attacks of tendinitis-bursitis who get less and less effect from x-ray treatment with each new attack.

Figs. 2 and *3* show the end result of neglected shoulder-hand syndrome. The chances of recovering complete hand function in this 73-year-old woman are remote. Neverthless one should begin with daily paraffin baths for two weeks, followed by whirlpool treatment with increasingly active exercise. Friction massage, fractional manipulation with strong traction, and electrical stimulation of forearm and hand muscles are important aids.

The most pernicious thing is the frequent, innocently given advice of the internist or general practitioner to avoid all exercise until pain has subsided. Even the patient in advanced cardiac failure can tolerate passive movements of the joints without harm.

While advanced claw hands seldom recover even with treatment, it is true that the frozen shoulder eventually recovers both motion and strength. The main function of physical therapy in the first instance is to prevent irreversible changes and in the second to speed recovery. We have not found that stellate blocks are helpful. I do not believe that a specific disease of the autonomic nervous system has been quantitatively or histopathologically demonstrated and feel that sympathectomy is rather drastic. Pain

is known to cause segmental reflex vasoconstriction, so that benefit from autonomic blocking is probably non-specific. Priscoline,® quaternary ammonium bases, and large doses of nicotinic acid are entirely acceptable aids to treatment by aiding vasodilation.

Arthritis.—The two types of degenerative arthritis which respond most gratifyingly to physical treatment are found in the cervical spine and in the knee joints. Relaxing heat from diathermy or a tungsten lamp is followed by traction in the former case and by progressive resistance exercise to rebuild the quadriceps muscle, in the latter. Acute Heberden's nodes may be treated by the paraffin bath, followed by grip exercises. Massage is of little value in degenerative joint disease.

Case 3.—A 62-year-old surgeon was referred for symptoms in the left knee, in which a damaged medial semilunar cartilage had been removed some years before and more recently a joint body. The main complaint was of the knee's suddenly "giving way" at unexpected moments. On examination there was fullness but no tenderness. A small increase in joint fluid was thought to be present. There was abnormal mobility of minor degree in several planes. Moderate atrophy of the anterior thigh muscles was evident. Knee flexion began at 5° and stopped at 115°.

On progressive resistance exercise the patient became asymptomatic in six weeks.

In rheumatoid arthritis, treatment must be tempered by the acuteness of symptoms. In the most extreme cases only hot packs or tubs, supportive splints, massage, and gentle passive motions can be tolerated. The use of cortisone and ACTH however, permits artificial remissions during which intensive physical therapy can be carried out to increase joint range and muscle strength. Contrast and paraffin baths are easily improvised by the patient at home. Members of the family can be taught stroking massage and to help carry out active assistive motions of all affected joints for preservation and increase in motion range.

Case 4.—A 46-year-old farm wife had rheumatoid arthritis of 12 years duration. Flexion contractures of 35° had developed in hips, knees, and elbows. She was rapidly approaching bed-chair helplessness. A three-week trial on cortisone had a negligible effect on objective measurements and only a very slight one on pain. There were no severe constitutional evidences of systemic severity, such as anemia or fever. Bilateral synovectomy of the knee joints and brief wedging casts corrected hip and knee fixed flexion to 10°. The patient now walks erect with canes and temporary leg braces. Joint range in the knees is 70°. After several weeks of intensive exercise the only remaining major disability is the difficulty in getting to her feet and sitting down without aid. Pain is minimal.

Low Back Pain.—For the violently acute case the patient should be hospitalized and given liberal opiates. A sagging mattress cannot be tolerated. If necessary add fracture boards under the mattress at the end of three or four days. Try

Fig. 2

Case N. B.—Neglected shoulder-hand syndrome, right. Total possible range in shoulder abduction, elbow extension and finger flexion, right and left.

Fig. 3

X-rays, right and left hands, same case as *Fig. 2.*

using skin traction to both lower extremities, with six to eight pounds on each.

Luminous heat and stroking massage may or may not be effective aids, depending on severity. Every effort should be made to establish etiology, but treatment does not differ greatly whether or not the patient has the disk syndrome. For very severe pain we use 20 per cent intravenous mephenesin (tolserol®),[2] one to two grams. The chief disadvantage of this material is its tendency to thrombose veins. We have tried many ways of administration such as washing in the solution with saline, and have finally settled on simply injecting it with a 50 ml. syringe. We feel that it is necessary to inject rapidly enough to produce vertical nystagmus. Duration of relief from pain is variable, lasting from three to 24 hours. We supplement the intravenous drug with tablets or elixir up to 4 or 5 grams daily.

We disagree with Schlesinger[3] that tolserol® intravenously is ineffective in cases of herniated disk as compared with other types of backache. We have had no instance of failure to relieve pain except in a patient with rheumatoid arthritis and hysteria, in whom the dose may have been too low.

Case 5.—A 47-year-old brewery worker had had several attacks of low back pain with left sciatica, going back ten or twelve years. He was referred with a recurrence of two weeks' duration, following a lifting strain. Pain was totally disabling and typically radicular, aggravated by coughing, and accompanied by hypesthesia down the leg and along the lateral surface and sole of the foot. There was atrophy of the calf and loss of the ankle jerk. Straight-leg raising was severely limited and the sciatic trunk tender to deep palpation. Films of the lumbar spine were within normal limits.

The patient was given a hospital appointment for surgery, a disk rupture being expected at L_5-S_1. While waiting for the hospital appointment we administered the conservative treatment outlined here, including intravenous tolserol.® After 60 days of such treatment the patient felt completely relieved. He cancelled his hospital appointment and returned to his job. He is still asymptomatic six months later.

The violent symptoms begin to subside in a few days. The patient should now be gotten on his feet for increasing periods of time. A firm corset which splints the back muscles (not a narrow belt which uselessly squeezes the hips together) will be helpful in any patient who gets pain on stooping and bending, not in others. The late rehabilitation of these patients requires their cooperation at a time when they are nearly asymptomatic and therefore reluctant to accept treatment. The main elements at this time include: (1) cautious stretching of all contractures; (2) rebuilding of atrophied musculature with progressive resistance exercise; (3) discontinuance of corset or brace, (4) instruction in how to lift heavy articles without precipitating new attacks; and (5) advice on type of bedding to be used.

I do not mean to imply that conservative treatment will be invariably successful in all cases or that surgery should never be done. The truth is that a completely successful treatment for disks and other causes of low backache still remains to be discovered. I see so many surgical failures that I am sure that surgery is not the answer.

Hemiplegia.—The acute medical care of these patients has received a gratifying upsurge in interest. When one can be sure that thrombosis or embolism has occurred, the use of anticoagulants and antispasmodics such as stellate block or sympatholytic drugs probably limits the damage. In selected instances of hemorrhage surgical evacuation of the clot ought to be considered.

If medical men would only not stop there much needless loss of function could be prevented. Unless the attack is very mild, all these patients develop periarthritis and shoulder-hand syndrome. In the absence of heart failure or severe hypertension there is no more reason for prolonged bed rest than there is following abdominal surgery, and every reason against it. All the evils well advertised in the abuse of bed rest in other conditions are potentially here,[4] plus a few extra ones: disuse atrophy and invalidism; phlebothrombosis and phlebitis; colon and bladder disturbances; malnutrition; bed sores; pulmonary atelectasis, infection, and embolism. Most disastrous of all, the patient begun on a regimen of total care refuses to take back the responsibility of beginning to care for himself. Weeks off his feet atrophy his postural and righting reflexes and magnify his fear of falling to the pitch of an hallucinatory dread. To expect the patient to make much of a spontaneous comeback in this setting of studied neglect is to believe in magic.

Particularly when the patient is protected by dicoumarol there is no need for the traditional elaborate caution. The patient should be got up

the next day, preferably by skilled personnel* who understand gait training in the disabled. Walkers are not much good for this purpose (and hardly for any other). Walking parallel bars and stall bars are best. The patient may astonish you by being able to stand and bear his weight on an extremity which, a few minutes earlier in the supine position, he was scarcely able to move. This is because strong vestibular and reticular impulses are discharged by the stimulus of gravity, producing extensor thrust. If the patient is unable to bear weight even with the aid of these influences, a walking cylinder of plaster or plastic (celastic®) should be quickly improvised. In some instances this will be needed for only a short time. In others it should be supplanted by a long leg brace with a slip knee lock and klenzac ankle joints to provide dorsiflexion at the ankle by means of an internal spring. In still other instances, where the patient quickly recovers knee extension but not ankle dorsiflexion, only an ankle brace will be required.

The physical treatment prescription should include elevation of the affected extremities to drain away edema, followed by massage of the shoulder and assistive or passive motions through the complete range. Tetanizing currents may be used to stimulate proprioception in strongly inhibited muscles such as the shoulder abductors, elbow extensors, forearm supinators, and wrist and finger extensors; in the lower extremity chiefly the knee extensors and ankle dorsiflexors.

After the first few months electrical stimulation is useless and may be harmful. If the upper extremity is quite inert, spring suspension must be instituted to hold the humerus in abduction and facilitate reeducation for tasks such as eating. One should combat edema in the affected lower extremity with elastic bandaging or stockings.

The occasional patient with severe progressive arteriosclerosis will not respond to treatment. In these patients multiple small softenings throughout the cerebrum cause relentless physical and mental deterioration. Skilled psychological testing may point out such cases at the outset and may also aid in localizing specific aphasic defects in the right-handed right hemiplegic. Speech training, while not generally available, is sometimes the most important part of the campaign to get the patient back on his job.

Case 6.—A 26-year-old man received a rifle wound of the left cerebrum while in action in the European theater in 1945. He was unconscious for many days. Subsequently he was profoundly paralyzed on the right and totally aphasic. It was assumed that he would never walk. He spent 22 months in various army and veterans hospitals. After many months he was able to take a few assisted steps with bracing. Intensive speech therapy was carried out as well as prolonged physical therapy.

When last reviewed, five years after injury he had the following abilities and disabilities: His right upper limb is totally non-functioning except as a prop for holding paper when writing with the left hand. His ankle is braced only with a piano wire spring brace. The gait is without associated movements and shows dropping of the right hip, giving a slight lurch. He does not circumduct however, and easily climbs stairs and drives his car. He takes care of all his personal needs and is employed in the mailing section of a bank. He has slow, labored, but complete speech, without block. He writes very well with the left hand.

Many other aspects of the intermediate and late rehabilitation of hemiplegia cannot be treated in this brief review. We use progressive resistance exercise both for the uninvolved extremities and, when possible, for the affected side. Pulley and bicycle exercises for alternating rhythms are excellent adjuncts. Occupational therapy for self-care activities and for such things as left-handed writing and one-handed typing can add much to the patient's program. These patients cannot be nearly so well treated in a private room as they can in a setting where they are encouraged by the example of other similar convalescents at more advanced stages.

SUMMARY

(1) I have discussed selected conditions frequently met in internal medicine which particularly benefit from physical therapy: shoulder-hand syndrome and periarthritis, arthritis, low back pain, and hemiplegia.

(2) I particularly stress preventive aspects of some of these disabilities such as recognition of the pernicious effects of over-immobilization of the upper limb and the abuse of bed rest in hemiplegia.

(3) I also emphasize thoughtful prescription-writing of physical methods and the use of qualified personnel.

*A physical therapist trained in an A.M.A. approved school and registered in the American Registry of Physical Therapists.

REFERENCES

1. Boas, E. P.; and Levy, H.: Extracardiac Determinants of the Site and Radiation of Pain in Angina Pectoris with Special Reference to Shoulder Pain. Am. Heart J., **14**:540, 1937.
2. Mead, S.; and Harell, A.: Unpublished observations.
3. Schlesinger, E. R.: Clinical Applications of Myanesin. Tr. New York Acad. of Sci., Ser. II, **2**:5, 1948.
4. Irvin, C. W.; and Burgess, A. M.: The Abuse of Bed Rest in The Treatment of Myocardial Infarction. New England J. Med., **243**:486, 1950.

DISCUSSION (*Abstract*)

Dr. E. M. Smith, Washington, D. C.—Dr. Mead stresses the common complaint that specialists dominate medical education to such a degree that they stress the rare disease rather than the common one.

Internal medicine encompasses a vast field. In the Medical Service of the Army, the chief of the medical service, usually a board member in internal medicine, has under him a general medical section, electro-cardiological or cardiovascular section including the peripheral vascular diseases, a gastroenterologic, allergic, contagious disease and respiratory disease section and, in some instances tuberculosis is handled separately.

Thinking then of these varied sections under this internist and considering that each individual case has a proper history and physical examination, we in physical medicine are confronted with a patient who needs help. We frequently find that the primary condition is not in our realm though we must be conversant with it in order to implement any physical treatment.

A patient with a primary diagnosis of anemia in a physical treatment program may be evaluated and properly treated only on the basis of recognition of the primary disease. To state that we cannot help him is erroneous. In the field of physical treatment in internal medicine I am sure that there are many home-fast chronically ill for whom a program of physical treatment may be instituted so that they can be taken care of at home and need not be sent to hospitals or institutions. This seems self-evident but is often overlooked.

In closing, in many respects physical treatment in internal medicine is found in the two decades of life of 40 to 60. Most significant during these years of late maturity, we in physical medicine simply help these persons carry on with their disorder. They are usually the arteriosclerotic, hypertensive, degenerative arthritic, the obese, or they could be called the neurologic, metabolic or cardiovascular.

Dr. Walter E. Fleischer, Baltimore, Md.—I wonder whether you have anything to give us on the industrial backache. Suppose you have a man whose history, as far as any arthritis or previous injury is concerned, is essentially negative; x-ray of the spine shows nothing abnormal; urinalysis is negative; he has some muscle spasm but nothing else clinically; and sedimentation rate is within normal limits. Sometimes it seems as though the only cure is a compensation award. Do you think cortisone has anything to offer in such a case?

Dr. Mead (closing).—I have had no experience with the use of cortisone in backache. Some people go to the extreme of saying it is like aspirin, a generalized pain killer, without any diagnostic significance. I cannot answer the question further.

COMBINED DRUG THERAPY FOR PARKINSON'S DISEASE*

By JOSEPH C. EDWARDS, M.D.†
EMILY E. MUELLER, M.S.‡
MASAO OHMOTO, M.D.‡
GUS FURLA, M.D.‡
and
SEDGWICK MEAD, M.D.‡
St. Louis, Missouri

INTRODUCTION

Since James Parkinson described the parkinsonism syndrome in 1817, little has been added to our knowledge of the treatment of this disorder until recent years, when certain antihistamines and antispasmodics were introduced as treatment. The three general groups of medications found to be most useful in the treatment of this disorder are the atropine and atropine-like drugs, the antispasmodic drugs, and the antihistamines.

Atropine and Atropine-Like Drugs.—The beneficial effects obtained by the use of the atropine or belladonna group in the treatment of parkinsonism have been impaired by disagreeable side effects such as dryness of the mouth and blurring of the vision.[1] Subsequently synthetic atropine-like drugs were developed in the hope that these products would retain the effectiveness as spasmolytics without the toxic effects common to the atropine group. Of these atropine-like drugs such as trasentin®, meperidine hydrochloride®, panparnit®, pavatrin®, propivan®, and syntropan®, panparnit® has been the most successful in clinical trials.[2] In 62 per cent of 50 patients studied, Schwab and Leigh[2a] found that panparnit® produced 25 per cent greater improvement than previous medications. The improvement was mainly subjective although there was some reduction in rigidity and tremor. They considered panparnit® valuable in postencephalic parkinsonism but found that the arteriosclerotic types were not able to tolerate it.

*Read in Section on Medicine, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

*The authors wish to thank Merck & Co., Inc., for the dihydro-beta-erythroidine hydrobromide; Burroughs Wellcome & Co., Inc., for the perazil®; Lederle Laboratories Division, American Cyanamid Co., for the artane®, artane and tagathen,® artane and bellabulgara®, and artane® placebo; Geigy Co., Inc., for the panparnit®; E. R. Squibb & Sons for the tolserol®; Parke, Davis & Co., for the benadryl® and benadryl® placebo; Abbott Laboratories for the P-19®.

†Consultant in Cardiovascular Disease, Division of Gerontology, Washington University School of Medicine, St. Louis.

‡Division of Physical Medicine, Washington University School of Medicine, St. Louis, and City Infirmary Hospital, St. Louis.

Antispasmodic Drugs.—Both curare and tolserol® have been used in the treatment of parkinsonism patients: curare was found to cause too much loss of motor function;[3] the reports on mephenesin® and tolserol® have been conflicting. Bickers, Cohn, and Rheinberger,[4] reported that tolserol® in dosages of 5 grams a day for 5 weeks caused flushing of the face, nausea, dizziness, vomiting, and weakness. They reported no improvement in parkinsonism, though there was some improvement in other neurologic disorders. Berger and Schwartz[5] used oral mephanesin: and reported reduction in tremor and rigidity, especially if it were administered with atropine. They admitted however that certain patients derived little benefit from the oral administration of this drug.

Antihistamines.—Beneficial effects have been produced by the use of some antihistamines, less favorable results by the use of others. Gair and Ducey[6] found benadryl®, trimeton®, and decapryn® to be effective in over 50 per cent of the patients they studied; they found pyribenzamine®, histadyl®, antistine®, and thephorin® to lag far behind. Thephorin® produced some beneficial effects but caused too many undesirable side reactions.

Gair and Ducey[6] do not substantiate the belief that a synergism exists between effective antihistamines and the atropine-like drugs. Good results were produced by the use of benadryl® alone in 27 of 41 trials (66 per cent) and by the use of benadryl® in conjunction with other medications in 11 of 18 trials (61 per cent). Similar figures were obtained with trimeton® and decapryn® alone, with each of them in conjunction with atropine-like drugs.

Though trihexyphenidyl (artane®) is not regarded clinically as an antihistamine, it has been tried in the treatment of parkinsonism, and it produced some beneficial effects. Corbin,[7] administered it to two groups of parkinsonism patients and noted favorable responses in 77 per cent of the idiopathic group and in 71 per cent of the postencephalitic group. Doshay and Constable[8] studied 117 patients over a period of from 6 months to 2 years and found the use of trihexyphenidyl to produce mental stimulation as well as physical improvement. Canelis, Farness, and McGavack[9] administered trihexyphenidyl to a group of 23 patients and noted improvement in each patient. Most of the patients showed marked improvement.

Schwab and Tillmann[10] administered trihexyphenidyl to a group of 23 patients and noted improvement in each patient. Most of the patients showed marked improvement.

Schwab and Tillmann[10] administered triphexyphenidyl alone and in conjunction with other medications to 44 patients. They found through objective performance tests that 29 (67 per cent) of the patients were 20 to 30 per cent better after such treatment than they had been previously while they were on other medications. Seven of the 29 patients could be maintained on trihexyphenidyl alone; 22 of the patients required another drug in addition to trihexyphenidyl: 9 panparnit®, 7 benadryl®, and 6 had one of the atropine group. Trihexyphenidyl was found to be a failure in 33 per cent of the cases.

In a recent article Effron and Denker[11] reported favorable results with the use of trihexyphenidyl alone and in conjunction with various antihistaminic and antispasmodic drugs. The greatest improvement in functional activities and reduction in tremor and rigidity were obtained by the conjoint administration of trihexyphenidyl and thephorin®.

Two new drugs have recently been made available for trial with Parkinson's disease patients: dihydro-beta-erthroidine hydrobromide and P-19® (dimethyl amino ethyl alpha, alpha-diphenylpropionate hydrochloride). Shapiro and Baker[12] added erythroidine to the atropine drugs that were being given. Within a week or two they noted additional improvement in the patient's symptoms, maximum benefits being reached within a month. They say that this drug is relatively nontoxic in dosages as high as 300 to 400 mg. daily. No reports on the clinical trial of P-19® have appeared in the literature.

PURPOSE

There are several reasons why the search for a more effective drug for the treatment of Parkinson's disease is beset with difficulties. Although some work has been done in an attempt to reveal the mechanism by which certain drugs act to alleviate the symptoms in this particular disease, the specific site of action of the drug has not been ascertained.[13] The postulated sites of action for various drugs indicate that these may affect different parts of the neuromuscular system.[13] Thus it is extremely difficult to determine whether or not there is in each of these effective drugs one or more modes of action that are common to all of them. Another difficulty is the fact that the several groups of

effective drugs have no underlying correlation of chemical structure, even though the clinical responses they produce are somewhat similar. There is however a skeleton formula[6] a part of which is the antihistaminic nucleus common to trihexyphenidyl and to certain of the antihistamines. The formula of panparnit® has some similarity to that skeleton formula. Benzedrine®, myanesin®, and the solonaceous alkaloids like belladonna have not, however, any such similarity. To date the research and study in these specific areas, the modes of action and the chemical structures of these drugs, have not yielded a workable pattern on which could be made discriminatory selections of drugs for further improvement of the symptoms of parkinsonism.

Despite the difficulties that beset the selection of medications for parkinsonism patients, there still exists the need for a more effective means to relieve the tremors, muscular rigidity, oculogyric crises, muscle incoordination, speech difficulties, and general morale of these patients. In an attempt to supply this need, this study was undertaken to determine the relative effectiveness of various drugs which were to be used singly and in conjunction. The drugs selected were some of the newer preparations and those drugs considered effective in previous studies. Included in the present study were the belladonna group, perazil®, panparnit®, tolserol®, benadryl®, tagathen® artane®, and dihydro-beta-erythroidine hydrobromide.

An unselected group of 22 patients with parkinsonism were observed, 12 of them of postencephalitic origin and 10 of arteriosclerotic or idiopathic origin. Eleven were male, 11 were female; age range was from 30 to 82 years; duration of symptoms was from 1½ to 31 years.

Prior to the administration of any drugs in this study, all patients were evaluated, and each one was given a baseline rating. *Table 1* lists the medications in the order in which they were administered and the prescribed dosages of these medications. Ten drugs or groups of drugs were tested. In order to aid evaluation of the response, there were periods when placebos were administered and periods when no medication was administered. Each medication was administered for a period of one week, at the end of which time each patient's condition was evaluated for the week. Gair and Ducey found it feasible to use one week trial periods for testing the clinical efficacy of new preparations. Solonaceous alkaloid thereby generally elicits the clinical response in less than one week. Schwab[2a] has also used one week trial periods. Each evaluation was determined on the basis of: (1) electromyograms, (2) a ward-nurse's observations, (3) the attending physician's evaluation, (4) another physician's independent evaluation obtained by interview, and (5) the patient's impressions, obtained through the same interview.

METHOD OF EVALUATION

(1) *Electromyograms.*—With the use of surface electrodes and oscillographic recording technics, electromyograms were recorded from the wrist extensor-supinator group of muscles of both upper extremities. The actual sampling of activity in each case amounted to not more than 60 seconds, but the sampling was representative of the activity during a period of from 15 to 20 minutes. The electromyograms were recorded each week.

For the evaluation of the electromyograms the degree of abnormality was rated numerically rather than mathematically, the latter involving measurement of potential heights or duration of bursts. The rating was the synthesis of electromyograms recorded during the entire observation period and took into consideration baseline sway as measure of gross movements, which were not always well represented by the potentials themselves. The rating refers to abnormal activity while the patient was supposedly at rest and as relaxed as possible. On the basis of these ratings the three most effective medications were selected for each patient. A crude reliability test in the reading of the electromyograms indicated, on rereading, a consistency of about 95 per cent.

(2) *A Ward-Nurse's Observations.*—At the end of each week each patient's responses to the medication of the week were checked as to: physical lethargy, mental alertness, emotional disturbance, nausea, general well-being, appetite, vomiting, sialorrhea, tremors, rigidity, speech, sleep, gait, nystagmus, balance, and coordination. Ratings were on a scale of 0 to 4, the latter being the best rating. Each week the above indicated ratings for each patient were totaled. At the end of the study these totals were examined for the three highest scores. These three scores pointed to the three drugs most effective for the alleviation of the symptoms of this disease.

(3) *The Attending Physician's Evaluation.*—The attending physician, who closely observed the patients both prior to and during the study and also modified dosages according to individual patient requirements, provided the third evaluation of the effectiveness of the various medica-

tions. When the study was completed, he listed the medications which he considered first, second, and third in effectiveness for the individual patient. His conclusion was based upon the patient's ability to ambulate and perform self-care activities.

(4 and 5) *Another Physician's Independent Evaluation Obtained by Interview and the Patient's Impressions, Obtained Through the Same Interview.*—Each week another physician conducted independently a detailed interview with and examination of each patient. He recorded the patient's subjective impressions and his own objective evaluations as to: appetite, tremors, rigidity, memory, sleep, sialorrhea, blepharospasms, speech, gait, ability for self-feeding and self-care, performance of standard exercises, and handwriting. By interpreting the notes that he took during the interviews, the physician provided the fourth and the fifth evaluations, those medications were selected that were considered first, second, and third in effectiveness for each patient.

When the three most effective medications for each patient were selected, numerical scores (3 = best; 2 = 2nd; 1 = 3rd) were assigned to these medications for all five evaluations. The greatest possible score for any medication per patient (3 —best—multiplied by 5—ratings) was 15. Thus the highest possible total score (the sum of the scores of all the patients), the composite score, for any one medication was 330. On the basis of this composite score a hierarchy of the effectiveness of the medications could then be determined; the higher the score, the greater the effectiveness of the medication.

RESULTS

Fig. 1 shows in the order of their effectiveness the composite scores for each of the weekly medications. It should be noted that benadryl® had a higher score than had any other single drug and that artane® rated second among the single medications. Artane® administered with bellabulgara® rated higher than benadryl®; artane® administered with rabellon® and benadryl® had the highest score of all the medications tested.

Nine (41 per cent) of the 22 patients showed marked improvement during the course of this study. Of these 9 patients 8 showed the greatest improvement while they were receiving artane® with rabellon® and benadryl®. For the ninth patient artane® with bellabulgara® rated first in effectiveness and artane® with rabellon® and benadryl® rated second. Eight of these patients had previously been almost completely bedfast and unable to feed themselves. While they were receiving the above medications, however, they were able not only to feed themselves but to perform other self-care activities, six of them being able to walk unaided.

Eight (36 per cent) of the 22 patients showed some improvement, but not so marked as did

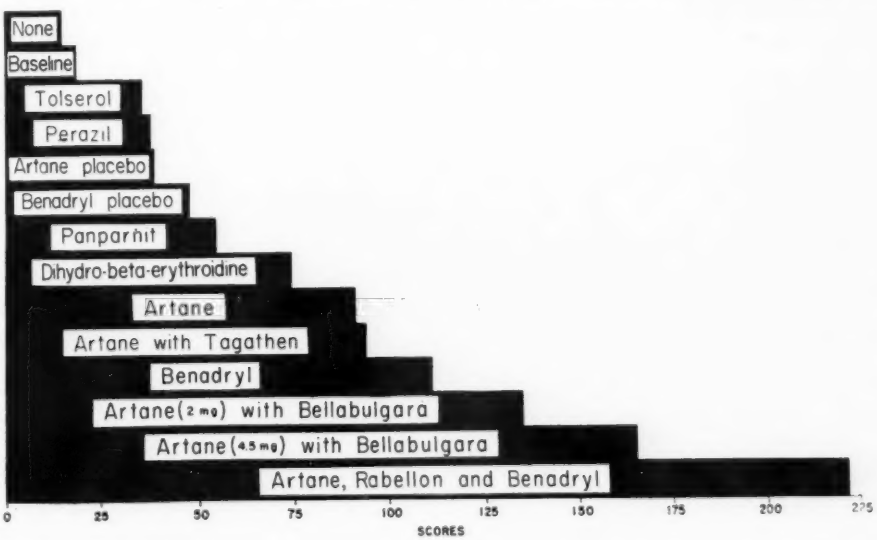


Fig. 1

Composite scores in order of effectiveness for each weekly medication administered to twenty-two parkinsonism patients.

the above 9. Of these 8 patients 5 showed the greatest improvement while they were receiving artane® with rabellon® and benadryl®, 2 while they were receiving artane® with bellabulgara®, and one while he was receiving perazil®. These patients had better appetites and better morale and could perform self-care activities more easily.

Five (23 per cent) of the 22 patients did not show any real improvement as a result of the medications used in this study. All except one were very mild cases of parkinsonism.

Fig. 2 shows a typical electromyogram recorded from a postencephalitic parkinsonism patient. The patient's condition was characterized by wild tremor bursts which persisted throughout the day almost without interruption and left the patient physically exhausted. The upper electromyogram shows such a tremor burst when the patient was receiving artane® placebo. The complete cessation of tremors while the patient was receiving artane® with rabellon® and benadryl® is shown in the lower electromyogram. Each electromyogram is typical of those recorded during that observation period.

DISCUSSION

There was some difficulty in evaluating the effectiveness of various medications in this study. Undoubtedly there were in some patients certain degrees of improvement which were totally unrelated to the medications administered. Some factors accountable for the gradual improvement of the patients from the beginning of the study to the end, a period of 3½ months, might be the sudden personal attention that they received through the weekly interviews and examinations, the hope engendered in them by the very fact of the study, the increased emphasis on physical therapy treatments and their conscious efforts to carry out activities that were previously impossible to them. The effectiveness of the drugs was however made apparent when during the last month of the study those patients who had been put on artane® placebo and benadryl® placebo suffered setbacks but rallied when they were returned to medications.

Another evaluating difficulty was the reactions of the patients to the study itself. Some of the patients who asserted that they felt better actually showed no definite objective improvement. Their assertions may have been prompted by the temporary hope that comes to many of the chronically ill during a new treatment procedure. Some objected to the periodic changing of medications, particularly if a previous medication had alleviated their symptoms to an extent never before experienced by them.

A still further difficulty toward evaluation is found in the limitations of electromyography as such in a study of this kind. Because the amount of tremor varies from day to day and often from hour to hour, it was not possible to know certainly whether the electromyograms recorded during the observation period were typical not only for the entire day but for the entire week. Since rigidity is represented by a very low-grade nontremorous activity (*Fig. 3*), it is not easy to determine electromyographically the degree of abnormality. Only during passive stretching of the muscles are certain of the abnormalities of action potentials brought out. In this study passive stretching was not used routinely.

Voluntary tetani were not graded or used in the evaluations because they presented difficulties of interpretation. While some voluntary contractions were highly tremorous, the action potentials produced during voluntary contraction in most of the patients were much lower in amplitude than those produced during a tremor burst at rest (*Fig. 4*).

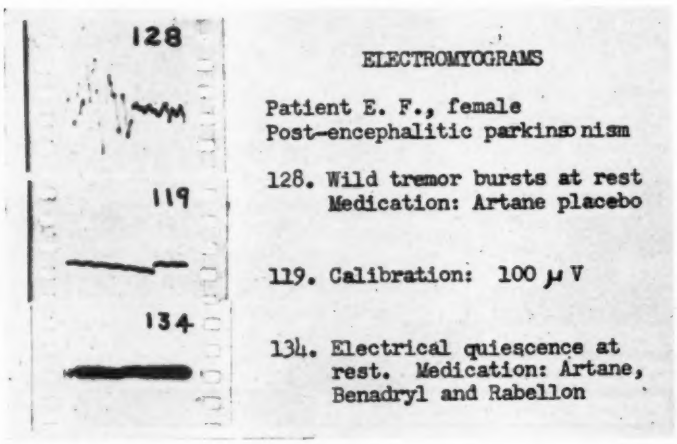


Fig. 2

Electromyograms comparing electrical activity at rest during periods when patient was receiving artane® placebo and when patient was receiving artane® with rabellon® and benadryl®.

In an attempt to determine the validity of the response of the patients, during a preliminary test period 8 patients were given placebos and 4 patients were given no medication at all. As a part of the main study placebos, one in appearance identical with artane® and one identical in appearance with benadryl®, were used.

It should be pointed out here that on the whole, conditions for this study were rather favorable. The fact that all the patients were hospitalized as convalescent-type patients facilitated procedures and made possible a great number of observations. It was inevitable that the patients should undergo some degree of training during the early weeks of the study, but they eventually adapted themselves to the routine. Conditions were standardized as much as possible: the patients were examined in exactly the same way each time; and because they were examined at approximately the same time each day, the intervals between observations and ingestion of meals and medications were roughly constant.

As a further means to evaluation, one week after the completion of the actual study the patients were taken off all medication. The reason for this was to permit further observation of patient response and to note the relative importance of the cumulative effects of the entire study. During this week 16 mm. motion pictures were taken of about half of the patients, those who showed the most marked symptoms, while they made wheel-chair transfers, walked, and performed standard exercises. These films were taken for purposes of comparison with the films taken of the same patients when they were receiving placebos, dihydro-beta-erthroidine hydrobromide and the most effective medication, artane® with rabellon® and benadryl®.

With regard to the actual administering of the drugs, *Table 1* shows the usual dosages of the various medications used in the study and the number of patients for whom these dosages had to be modified. For certain patients some of the medications had to be discontinued entirely: tolserol® for 2 patients; panparnit® for 5 patients; dihydro-beta-erythroidine hydrobromide for 3 patients; benadryl® placebo for 4 patients; artane® placebo for 4 patients. Before those medications were discontinued, these patients manifested augmentation of tremors, nervousness, and sialorrhea, had difficulty in walking, or in general felt weaker; when they were returned to artane® with rabellon®, or artane® with benadryl®, they promptly improved.

Schwab and Tillman[10] got favorable results by varying the dosages of artane® with different

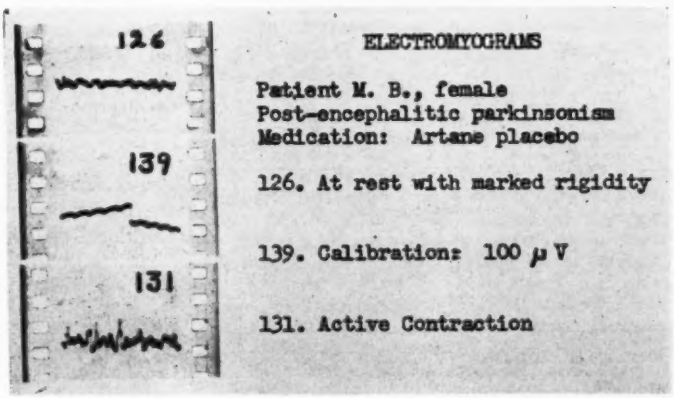


Fig. 3

Electromyograms from postencephalitic parkinsonism patient whose condition was characterized by marked rigidity.

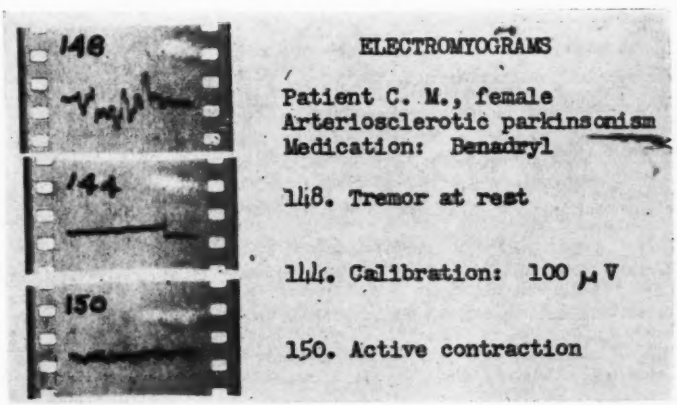


Fig. 4

Electromyograms from arteriosclerotic parkinsonism patient, comparing amplitude of action potentials produced during tremor burst and during active contraction.

patients. They also found that overdosage produced side effects such as dryness of the mouth, giddiness, blurring of the vision, and headaches similar to those produced by panparnit®. They considered the optimum dosage to be 2 mg. artane® administered five times daily. In older patients they found artane® less toxic than panparnit® but also less effective in reducing tremor. Canelis, *et alii*[9] found the effective daily dosage of artane® to lie between 6 and 16 mg. Toxic symptoms such as blurring of vision were first noted when 18 to 20 mg. a day were administered.

In our study artane® in dosages of 4 or 5 mg. three times daily had practically no toxic effects on the patients. There was none of the "numbing" or lethargic effect that is occasionally reported about tolserol®, nor was there tachycardia, blurring of vision, or drying of the mouth, although salivation was better controlled. Two patients developed transient psychoses while they were receiving 20 mg. artane® daily but had no toxic effects when artane® was reduced to 15 mg. daily. In the majority of the patients in the present study the best results were produced with dosages of artane® from 4 to 5 mg. three times daily administered with rabellon® tablet three times daily and 100 mg. benadryl® four times daily.

MEDICATIONS, USUAL DOSAGES AND MODIFICATIONS ADMINISTERED FOR ONE-WEEK PERIODS TO EACH OF 22 PATIENTS WITH PARKINSON'S DISEASE

Medication	Usual Dosage	No. patients who received lower dosage	No. patients who received higher dosage	No. patients not maintained on drug
Perazil®	50 per cent—50 mg. t.i.d. 50 per cent—50 mg. q.i.d.	—	—	2
Artane®	5 mg. t.i.d.	5	3	0
Artane®	2 mg. t.i.d.	0	1	0
with tagathen®	25 mg. t.i.d.	0	1	0
Artane®	2 mg. t.i.d.	0	0	0
with bellabulgara®	0.5 units t.i.d	0	0	0
Panparnit®	gradually increased to 50 mg. 4 to 6 times daily	—	—	5
Tolserol®	gradually increased to (0.5 gm.) tab. V or VI, 4 or 5 times daily	—	—	2
Artane®	4.5 mg. t.i.d.	2	0	0
with bellabulgara®	0.5 units t.i.d.	0	0	0
Benadryl®	100 mg. q.i.d.	6	0	0
Artane® placebo	2 mg. t.i.d.	0	0	4
Benadryl® placebo	cap — q.i.d.	0	0	4
Dihydro-beta-erythroidine hydrobromide	50 mg. q.i.d.	3	0	3
Rabellon® (added after 3 days)	tab.* — t.i.d.	0	5	3
Artane®	5 mg. t.i.d.	5	0	1
with rabellon®	tab.* — t.i.d.	0	0	1
and benadryl®	100 mg. q.i.d.	3	0	1

*Hyoscyamine hydrobromide 0.4507 mg., atropine sulphate 0.0372 mg., and scopolamine hydrobromide 0.0119 mg.

Table 1

It should be pointed out here that there are similarities between the medications which rated first and second in effectiveness. The fact that artane® administered with bellabulgara rated first with 3 of the 17 patients who had favorable reactions does not bespeak inconsistency with the fact that artane® administered with rabellon® and benadryl® rated first with 13 of the 17 patients. The similarity of the drugs in both medications makes for actual consistency of results: artane® was present in both medications, and both rabellon® and bellabulgara® are belladonna derivatives. The presence of benadryl® in the medication that rated first apparently gave additional benefit to a number of patients.

The majority of patients in this study had more severe symptoms than the average parkinsonism patient seen in an out-patient clinic. The patients who benefited from the medications used in this study had fewer and less violent tremors and were able to control the tremors better. Rigidity in many patients was somewhat mitigated. Detailed reports of the changes for each patient are given below, under case summaries. Subsequent observations for a two-month period while the patients were receiving artane® with rabellon® and benadryl® showed that the favorable effect was maintained during this period.

Though the preparation P-19® was not available in time to be included in this study, it has been used for clinical trial on the same 22 patients since that time. Little improvement of any significance was noted in these patients when they received, after a week off all medication, P-19® in dosages of 5 mg. daily for two days, 5 mg. twice a day on the third day, and 5 mg. three times a day for the remainder of the week. Four patients became bedfast while they were off all medication and remained bedfast during the week when P-19® was administered. Those patients who, when they had been receiving artane® with

rabellon® and benadryl®, had been able to talk or feed themselves, could not perform these activities while they were on P-19® alone but were able to do so when rabellon® was added.

One cannot expect a complete cure of Parkinson's disease from the medications used in this study. A degenerative disease cannot be completely checked until more is known about the fundamental processes of the progressive changes that result from the disease. There was sufficient relief, however, in the majority of the patients in this study to warrant clinical use of such preparations.

SUMMARY

Twenty-two patients with parkinsonism were studied while they were under treatment with various medications. The drugs used were (in the order enumerated) perazil®, artane®, artane® with tagathen®, 2 mg. artane® with bellabulgara®, panparnit®, tolserol®, 4.5 mg. artane® with bellabulgara®, benadryl®, artane® placebo, benadryl® placebo, dihydro-beta-erythroidine hydrobromide, artane® with rabellon® and benadryl®. Each medication was administered for a one-week period.

Evaluation of the effectiveness of the weekly medications was made on the basis of electromyograms, a ward-nurse's observations, the attending physician's evaluation, another physician's independent evaluation obtained by interview, and the patient's impressions, obtained through the same interview.

The results of the study: 9 (41 per cent) of the 22 patients were markedly improved; 8 patients (36 per cent) were somewhat improved; 5 patients (23 per cent) who had slight symptoms of parkinsonism were not benefited. Of the 77 per cent who benefited from the medications, 13 received maximum benefit from artane® administered with rabellon® and benadryl®, 3 from artane® administered with bellabulgara®, and 1 from perazil®.

Cases cannot be reported in detail. Nine patients showed marked improvement. A brief description of four of these follows. Because of limited space, all cases treated cannot be described.

Case 1.—E. L., a 45-year-old man with postencephalitic parkinsonism of 19 years' duration. Prior to this study he had been receiving only atropine drugs. He was almost completely bedfast and unable to feed himself. His condition was characterized by coarse tremor of both right extremities and by cogwheel rigidity in all the extremities. During the course of this study he became ambulatory, fed himself for the first time in a number of years, and was able to carry out all other self-care activities. He manifested the greatest improvement while he was receiving artane® with rabellon® and benadryl®.

Case 2.—C. J., a 62-year-old man with postencephalitic parkinsonism of 12 years' duration. Prior to this study the patient had been receiving benadryl®. He was ambulatory; but he was not too adept at performing self-care activities, his speech was indistinct, and his sialorrhea was excessive. His condition was characterized by marked rigidity and fine tremor of both upper extremities. During the course of this study he improved markedly while he was receiving artane® in conjunction with other drugs. When he was taken off artane®, he became bedfast, was unable to feed himself, and developed pneumonia, the last probably due to change in status from ambulatory to bedfast condition. When he was returned to artane® in conjunction with other drugs, he again became ambulatory, was better able to perform self-care activities, and for the first time in 3½ years sialorrhea was normal during certain periods of the day. When he was taken off medications and put on placebos, he again became bedfast. When he was put on artane® with rabellon® and benadryl®, he not only became ambulatory again and was able to perform self-care activities but showed marked improvement in gait, speech, and sialorrhea.

Case 3.—R. M., a 49-year-old man with postencephalitic parkinsonism of about 10 years' duration. Prior to this study the patient was receiving rabellon®. He required assistance in locomotion, help in all phases of personal hygiene and feeding, was indistinct in speech, and had excessive sialorrhea. His condition was characterized by intermittent fine tremor of the right upper and lower extremities and a moderate degree of rigidity of all extremities. During the course of this study he was able to walk long distances unaided, sialorrhea was markedly improved, for the first time in 7 or 8 years he could feed himself, and in general he could carry out total activities. He was so aware of his remarkable progress that he literally took a new lease on life. He manifested the greatest improvement while he was receiving artane® with rabellon® and benadryl®.

Case 4.—M. P., a 31-year-old woman with postencephalitic parkinsonism of about 12 years' duration. Prior to this study the patient had been receiving benadryl.® She was intermittently ambulatory, in bed half the time primarily because of lethargy; speech and morale were poor, face was expressionless, and sialorrhea was excessive. She complained a great deal about various symptoms. Her condition was characterized by slight tremor and moderate rigidity. During the course of this study she became ambulatory to a greater degree, helped with the chores in the ward, hunted for four-leaf clovers in the yard; her face showed more expression; she started occupational therapy activities and evinced initiative in selling her products. She manifested the greatest improvement while she was receiving artane® with rabellon® and benadryl®.

Author's note (8-21-51): Since the above study was reported, we have studied the effect of MK-02 (tropine benzohydryl ether methane sulfonate, Merck and Com-

pany) on many of the patients in the above group. It compares favorably with benadryl® and artane®, but it is not possible to substitute it for them in all cases. The results of this study with MK-02 will be reported at the Second International Gerontological Congress in St. Louis, Missouri, September 8-16, 1951.

BIBLIOGRAPHY

1. (a) Price, J. C.; and Merritt, H. H.: The Treatment of Parkinsonism. J.A.M.A., **117**:335, 1941.
(b) Fabing, H. D.; and Zeligs, M. A.: Treatment of the Postencephalitic Parkinsonian Syndrome. J.A.M.A., **117**: 332, 1941.
2. (a) Schwab, R. S.; and Leigh, D.: Parpanit in the Treatment of Parkinson's Disease. J.A.M.A., **139**:629, 1949.
(b) Sciarra, D.; Carter, S.; and Merritt, H. H.: Caramiphen Hydrochloride (Panparnit) in the Treatment of Diseases of the Basal Ganglions. J.A.M.A., **141**:1226, 1949.
3. Schlesinger, E. B.: Recent Advances in the Use of Curare in Clinical Practice. Bull., New York Acad. Med., **22**:520, 1946.
4. Bickers, D. S.; Cohn, G. A.; and Rheinberger, M. B.: Progress in the Clinical Use of 3-(Ortho-Toloxy)-1, 2-Propanediol (Mephenesin) in Neurologic Disorders. New England J. Med., **242**:502, 1950.
5. Berger, F. M.; and Schwartz, R. P.: Oral Myanesin in Treatment of Spastic and Hyperkinetic Disorders. J.A.M.A., **137**: 772, 1948.
6. Gair, D. S.; and Ducey, J.: Chemical Structure of Substances Effective in Treatment of Parkinsonism. Arch. Int. Med., **85**:284, 1950.
7. Corbin, K. B.: Trihexyphenidyl, Evaluation of the New Agent in the Treatment of Parkinsonism. J.A.M.A., **141**:377, 1949.
8. Doshay, L. J.; and Constable, K.: Artane Therapy for Parkinsonism. J.A.M.A., **140**:1317, 1949.
9. Canelis, M.; Farnell, F. J.; and McGavack, T. H.: Clinical Experiences in Parkinsonism with a New Type of Antispasmodic, 3-(1-piperidy)-1-Phenyl-1-Cyclohexyl-1-Propanol Hydrochloride (Artane). Am. J. M. Sc., **218**:655, 1949.
10. Schwab, R. S.; and Tillmann, W. R.: Artane in the Treatment of Parkinson's Disease. New England J. Med., **241**: 483, 1949.
11. Effron, A. S.; and Denker, P. J.: A Clinical Evaluation of Certain Antihistaminic and Antispasmodic Drugs in Parkinson's Disease. J.A.M.A., **144**:5, 1950.
12. Shapiro, S.; and Baker, A. B.: Treatment of Paralysis Agitans with Dihydrobeta-Erythroidine Hydrobromide. Am. J. Med., **8**:153, 1950.
13. (a) Gitt, J. J.; Landau, W. M.; and Clare, M. H.: Influence of Benadryl (Dimethylaminoethyl Benzhydryl Ether Hydrochloride) upon the Electromyographic Recordings in Paralysis Agitans (Parkinsonism). Diseases of the Nervous System, **12**:3 (April) 1951.
(b) Berger, F. M.: Mode of Action of Myanesin. Brit. J. Pharmacol., **2**:241, 1947.

DISCUSSION (*Abstract*)

Dr. Louis H. Kohler, St. Louis, Mo.—At the St. Louis State Hospital rabellon® has been the drug of choice since 1940 in the treatment of parkinsonism. We have found the drug more effective particularly in younger individuals, the encephalitic variety responding better than the degenerative.

The dose is raised slowly to the level of each patient's tolerance which varies widely, and a month to six weeks is usually employed in determining the final optimal dose. Some patients do best when taking two doses daily at bedtime and in the morning, others tolerate three doses daily at intervals of eight hours, and still others profit most by dividing the total dose into four to six doses given throughout the day. Symptoms beyond a moderate mydriasis and dryness of the mouth are met by dropping the dose and maintaining it at the decreased level until better tolerance has been attained.

As to our results with other drugs tried, tolserol® and theophorin® were not of great value and our results were unfavorable. We have used trihexyphenidyl in a selected number of cases since May, 1950. In these cases, I am glad to confirm the general impressions of its value as outlined by Dr. Edwards and his co-workers.

The assessment of a drug used in the treatment of such a chronic and disabling disease as parkinsonism is not an easy one. The doctor who desires to test a new drug in parkinsonism should maintain critical objectivity. The symptoms of patients suffering from this disease fluctuate with the patient's emotional and physical status, and with his confidence in his doctor. Because of the psychiatric factors in this disease, it is important that consideration be given to this side of the investigation, especially since a number of investigators feel that the syndrome is a psychosomatic one and may respond to psychotherapy.

Because of the uncertainty of all known methods of treatment of parkinsonism one looks forward to anything new with great enthusiasm. We have had no experience with combined drug therapy for Parkinson's disease. The work of Dr. Edwards and his group indicates that we shall probably find that our best plan in cases of parkinsonism is to treat the patient with a combination of drugs rather than with one specific drug.

Dr. James L. O'Leary, St. Louis, Mo.—Our own experience relates to ambulatory parkinsonian patients treated in a large out-patient clinic. Benadryl® and trihexyphenidyl have become the drugs of choice with us since the undesirable side effects of atropine-like action are minimal as compared with the marked improvement frequently obtained. Since the advent of benadryl® and trihexyphenidyl we have been able greatly to reduce the use of hyoscine and stramonium in the treatment of parkinsonism.

We have had no difficulty with toxic side reactions in the case of trihexyphenidyl, using that drug even in excess of usually recommended doses. With benadryl®, toxic manifestations have been noted with the higher dosages, but these have always been alleviated by reducing the intake. It is our impression that the average parkinsonian patient can tolerate benadryl® with dosage in excess of that which may give rise to marked drowsiness in allergic patients.

From experimental studies with benadryl® on parkinsonian patients in our electromyographic laboratory we are inclined to attribute its beneficial effect to central depression occurring in supraspinal centers. We have not studied trihexyphenidyl in a similar fashion and rely entirely upon clinical judgment for estimating beneficial effects.

Dr. Edwards (closing).—Since the etiological agent in Parkinson's disease has not been defined other than damage of certain areas in the brain by infection or arteriosclerosis with altered nutrition, and since there is no way to arrest either encephalitis or arteriosclerosis, we have to do the best we can for the individual patient when he develops Parkinson's disease.

The combination of drugs described has, in our hands, best controlled the symptoms of paralysis agitans. It has made life much more bearable for many, and has enabled some to be ambulatory, who before treatment were bedfast. One should withdraw these medications with caution, and never take all of them away from the patient with severe Parkinson's disease, as serious complications or even death may ensue.

THE USE OF THE CYSTOGRAM AND URETHROGRAM IN THE DIAGNOSIS AND MANAGEMENT OF RUPTURE OF THE URETHRA AND BLADDER*

By JARRATT P. ROBERTSON, M.D.†
Birmingham, Alabama
and
JAMES W. HEADSTREAM, M.D.
Little Rock, Arkansas

Rupture of the lower urinary tract with extravasation of urine or irrigating fluid, due either to external trauma or instrumentation, is an emergency, and early diagnosis and treatment reduces both the morbidity and mortality.

The cystogram and urethrogram as diagnostic aids are the safest, most easily employed and most accurate of all the diagnostic procedures utilized in this complication. The material needed is easily obtainable and does not require the services of a trained urologist or roentgenologist.

The morbidity and mortality of ruptures of the lower urinary tract are dependent upon the size and location of the rupture, its duration, and other associated injuries, as well as the treatment. Extravasation from rupture of the bladder may be either intraperitoneal or extraperitoneal, depending upon the location of the rupture. Extravasation from the peritonealized surface of the bladder will spill into the peritoneal cavity. Should the rupture occur in the portion of the bladder not covered by the peritoneum then the extravasation will be limited by the transversalis fascia externally and the peritoneum internally. It finds ready passage into the space of Retzius and may pass through the abdominal inguinal ring and be confined within the delicate internal spermatic fascia. Extravasation into the scrotum from the penile urethra will be outside the external spermatic fascia.

In rupture of the urethra the tissues into which the extravasated urine or fluid extends are dependent upon the relation of the rupture to the triangular ligament, Buck's and Colle's fascia.

Extravasations from rupture of the prostatic urethra invade the perivesical tissues, the retroperitoneal space, and may extend into the ischiorectal fossa. The triangular ligament prevents extension into the perineum. The membranous urethra lies between the layers of the triangular ligament. Its rupture is usually accompanied by perivesical extravasation. The dense anterior layer of the triangular ligament prevents perineal involvement.

Extravasations from rupture of the urethra below the triangular ligament are limited in their spread by the relation of the rupture to Buck's and Colle's fascia. If beneath Buck's fascia, the extravasation will extend along the shaft of the penis. If through Buck's fascia, the extravasation may extend around the penis, into the scrotum and perineum, and over the symphysis into the subcutaneous tissue of the lower abdomen.

Traumatic ruptures of the lower urinary tract are usually due to fractures of the pelvis, penetrating wounds, straddle injuries and instrumentation. Rupture may occur from any form of instrumentation, the most serious being those produced with the resectoscope and lithotrite.

A review of the literature reveals that the mortality rate from ruptures of the lower urinary tract varies from 15 to 40 per cent. The majority of these figures were compiled prior to the introduction of chemotherapy and antibiotics. More recent figures with the use of chemotherapy and antibiotics reveal a lowered morbidity and mortality. The morbidity and mortality in the traumatic cases are also dependent upon other associated injuries. Prompt diagnosis and treatment are the most influential factors in their reduction.

McCauge and Samens,[1] found 133 or 17 per cent of 780 cases of fracture of the pelvis complicated by rupture of the urethra or bladder. There were 99 cases with intrapelvic rupture of the urethra, one with rupture of the anterior urethra, 16 with extraperitoneal and 6 with intraperitoneal rupture of the bladder and 11 cases with combined urethral and vesical rupture.

Noland and Conwell[2] in a review of 125 cases of acute fracture of the pelvis found 60 cases with blood in the urine. Of the cases with hematuria, there were 6 intraperitoneal and 16 extraperitoneal ruptures of the bladder and nine patients had either severe laceration or complete division of the deep urethra. Twenty-four per cent were complicated by rupture of the bladder or urethra.

---

*Read in Section on Urology, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

*From the Department of Urology, Medical College of Alabama, Jefferson-Hillman Hospital, Birmingham, Alabama.

†Assistant Professor of Urology, Medical College of Alabama, Birmingham, Alabama.

Instrumental perforation is an occasional complication of transurethral prostatic surgery, and may occur during other forms of transurethral instrumentation. It is difficult to determine the incidence of rupture of the bladder and urethra in transurethral surgery as there are few references to it in the literature. As the operator's technic improves there is a decrease in the instance of this complication. The desired surgical attainment in transurethral prostatic surgery is one which approaches a prostatectomy; that is, the removal of the prostatic tissue down to the prostatic capsule. It is at this point where there is little margin of safety between an uneventful resection and one complicated by perforation of the bladder neck or prostatic capsule. The most frequent site of the perforation seems to be in the prostaticovesical junction, and results in an extraperitoneal extravasation of urine and irrigating fluid. Intraperitoneal rupture of the bladder would necessitate a perforation in the peritoneal covered portion of the bladder. Fortunately this mistake is infrequent.

The symptoms of rupture of the lower urinary tract become obvious almost with its occurrence in transurethral surgery. Pain is the outstanding symptom, and is present when low spinal anesthesia is employed. For this reason, low spinal or caudal anesthesia is the anesthetic of choice in this type of surgery. Following the pain, rigidity of the abdomen is usually present, depending upon the amount of fluid escaping into the perivesical space or peritoneal cavity. In a review of the literature the appearance of shock at the time of perforation is stressed, but this is not always true as illustrated by *Case 9*. In this case a perforation at the prostaticovesical junction was accompanied by a fall in pulse rate and a rise in the blood pressure. For this reason, and because abdominal rigidity was absent, bleeding was not excessive and there was no decrease in the return of the irrigation solution, it was felt that a perforation had not occurred. The only symptom was low abdominal pain of unexplained origin that occurred near the completion of the operation. During transurethral instrumentation, the onset of sudden low abdominal pain of unexplained origin is pathognomonic of perforation. A cystogram made on the operating table at this time will prove or disprove the diagnosis. Troublesome bleeding may accompany the perforation. Due to its interference with vision the perforation may not always be visualized. In intraperitoneal perforations of the bladder the return of the irrigating fluid is reduced in volume and force.

In traumatic rupture of the lower urinary tract, the symptoms are not always recognized early as they may be overshadowed by shock and injury to other abdominal viscera. For these reasons the diagnosis is not always made early and at times is not suspected until the patient is unable to void. Rupture should always be considered in patients who have sustained severe trauma to the lower abdomen, especially those with fractures of the pelvis where hematuria or difficulty in voiding is noted. Hematuria is not proof of rupture of the lower urinary tract with extravasation, but should always be considered until it has been proven that it does not exist.

Numerous technics have been employed to prove or disprove the existence of ruptures of the lower urinary tract. Those most frequently employed are:

(1) Recovery of a measured amount of fluid introduced into the bladder
(2) Cystoscopy
(3) Air cystogram
(4) Excretory cystogram
(5) Opaque cystogram

The injection and recovery of a measured amount of fluid by way of a urethral catheter is not an accurate diagnostic procedure. In extraperitoneal ruptures essentially the same amount of fluid may be recovered as was introduced.

Cystoscopy is unsatisfactory, since if active bleeding is present small tears may be overlooked. The patient with a fracture of the pelvis, or in shock, cannot be placed in a satisfactory position for the examination and withstands the procedure poorly. Passage of the instrument may be difficult or impossible and may increase the injury.

The air cystogram is a fairly satisfactory and accurate method, but gas in the lower bowel may cause confusion in the interpretation of the roentgenogram. If the bladder is not clearly outlined the patient's condition may not permit the upright position to determine whether there is a collection of air under the diaphragm. Rupture of the bowel may permit the escape of gas into the peritoneal cavity and its collection under the diaphragm, which is confusing.

Excretory cystogram theoretically is an ideal method as it avoids all chance of trauma and infection. Unfortunately these patients are frequently in shock and do not excrete the dye, or require several hours to excrete enough to outline the bladder.

Retrograde cystograms and urethrograms employing a 10 to 20 per cent solution of skiodan,® furnish accurate information with less difficulty than any of the other technics. Employing sterile technic, a catheter is introduced into the urethra, and if obstruction is encountered before entering the bladder the solution may be injected with gentle pressure and a roentgenogram may be made, to determine whether there is a laceration of the urethra and its location. We have seen no complication from the escape of the fluid into the peri-urethral, perivesical or peritoneal cavity. There is no greater danger of infection from its use than from any other instrumental procedure employed in the same case. If the catheter passes into the bladder, approximately 150 cc. of the solution is injected. With the catheter in place and clamped, if the patient is cooperative, he is instructed to attempt to void and a roentgenogram is then made. If there is an intraperitoneal rupture the dye will enter the peritoneal cavity and conform to the contour of the loops of bowel in the pelvis. In extraperitoneal rupture the contrast medium fans out into the perivesical tissues.

The treatment of rupture of the lower urinary tract is dependent upon the location and the extent of the injury. It is desirable to know whether the rupture is intraperitoneal, extraperitoneal or urethral. Adequate treatment must also provide for the treatment of shock and associated injuries, urinary drainage, surgical drainage of the tissues into which fluid or urine has escaped, and where possible, closure of the perforation or bringing into apposition the lacerated parts.

In intraperitoneal ruptures it is essential to know whether other abdominal viscera have been injured. The bladder and peritoneal cavity are opened, fluid aspirated from the abdominal cavity, and the abdomen examined to see if there are other abdominal injuries. The rupture in the bladder is closed on the peritoneal side with chromic catgut, and the mucosal side with plain catgut. The bladder is then closed around a large catheter, employing the technic of Boyd. With the use of chemotherapy and antibiotics the peritoneal cavity is usually closed without drainage.

In extraperitoneal ruptures a suprapubic cystotomy may or may not be indicated, but the perivesical space is drained to the base of the bladder. If accessible, the laceration in the bladder should be closed, but this is not essential.

In lacerations of the posterior urethra where catheterization is impossible, the bladder is opened. Then working with a sound in the urethra and a second sound or finger in the bladder neck, the urethral sound is guided into the bladder. We have found the Thackston hemostatic bag to be ideal for drainage in these cases. The catheter end of the bag is threaded over the sound and pulled through the urethra by way of the suprapubic opening. This bag furnishes the suprapubic tube required for drainage, a bag to pull the prostate down and to approximate the torn ends of the urethra, as well as a catheter to splint the urethra to permit epithelization around it. The incision in the bladder is carefully closed around the suprapubic tube and the perivesical tissues are drained to the base of the bladder. The catheter end of the bag is strapped to the thigh to maintain light tension for 10 to 14 days. An indwelling urethral catheter is worn for 6 to 10 weeks to assure a urethra of normal caliber and to prevent the development of a traumatic stricture.

We have never seen an abscess develop in the perineum in cases treated in this manner. If it should occur it can easily be drained through the perineum.

This form of treatment has given consistent and satisfactory results, and we do not feel that perineal exposure and repair of the ruptured urethra is essential. The position necessary for perineal exposure of the urethra at the time of injury is frequently contraindicated because of shock and multiple fractures of the pelvis.

In the traumatized urethra and bladder where catheterization is possible, and the cystogram does not reveal evidence of extravasation, and there are no clinical signs to indicate extravasation, urinary drainage with an indwelling catheter is sufficient.

Hemorrhage from the anterior urethra can be controlled by winding a snug bandage around the penis with an indwelling catheter in place.

All of these patients should have the benefit of chemotherapy and antibiotics, and transfusions when indicated.

CASE REPORTS

Case 1 (*Fig. 1*).—J. J. J., a 29-year-old man was admitted to the hospital following an automobile accident, with a fracture of the pelvis and right femur. The patient was unable to void. He was catheterized eight hours following the accident and grossly bloody urine was obtained. The cystogram revealed an extraperito-

neal rupture of the bladder. A suprapubic cystotomy was done and the perivesical space drained. The patient made an uneventful recovery, with good urinary function.

Case 2, (Fig. 2).—W. B., a 39-year-old man, was shot in the lower abdomen. When he was catheterized grossly bloody urine was obtained. The cystogram revealed an intraperitoneal rupture of the bladder. Laparotomy disclosed a perforation of the bladder, rectum and ileum. The perforations in the bowel were closed first. The perforation in the bladder was closed on the peritoneal side with chromic catgut, mucosal side with plain catgut, and the peritoneal cavity was closed without drainage. A suprapubic catheter was placed for drainage. The postoperative course was uneventful.

Fig. 1

Case 1.—Cystogram showing an intact bladder with extravasation into the perivesical space.

Fig. 2

Case 2.—Cystogram showing bladder outlined with escape of the opaque medium into the peritoneal cavity from a gunshot wound.

Case 3.—A. M., a 31-year-old woman, had a vaginal hysterectomy. An indwelling urethral catheter was placed for urinary drainage. Eight hours following surgery it was noted that the urinary drainage was scant and blood tinged. The catheter was irrigated and found patent, but the irrigating fluid would not return. A perforation of the bladder was suspected and a cystogram made. It revealed an intraperitoneal extravasation of the fluid. There was a mass in the lower abdomen resembling a full bladder. Following the removal of the catheter the McCarthy panendoscope was introduced into the bladder and 1500 cc. of clear urine obtained. The examination revealed the bladder to be intact. A rupture of the urethra was visualized through which the catheter had passed into the abdominal cavity. A catheter was passed through the urethra into the bladder and left indwelling for two weeks. Recovery was uneventful and there was no morbidity from the introduction of the contrast medium into the peritoneal cavity.

Case 4.—L. C., a 38-year-old man, was shot in the lower abdomen. The abdomen was rigid and the voided urine grossly bloody. A cystogram revealed an intact bladder. The abdomen was explored and a perforation of the rectum closed. Free fluid was found in the peritoneal cavity. An indwelling urethral catheter had been placed before the operation. When the bladder was distended to more than 250 cc. a small leak was noted in an ecchymotic area on the dome of the bladder. The bullet had apparently creased the dome of the bladder producing a small perforation which did not leak when the bladder was only partly filled, giving a false impression of an intact bladder, but leaking when the bladder was distended. The patient was not asked to attempt to void with the catheter in place and that probably accounts for the failure of the contrast medium to escape into the peritoneal cavity. The perforation was closed and a suprapubic catheter placed for drainage. Recovery was uneventful.

Case 5 (Fig. 3).—T. G., a 76-year-old man was near the end of a transurethral resection, done under low spinal anesthesia, when sudden marked abdominal pain developed. Bleeding was marked at this time, and the return flow of water was not as forceful as usual. Suspecting a perforation at the bladder neck, a cystogram was made on the operating table. There was marked extravasation of the contrast medium around the lateral sides of the bladder and into the perivesical space. A suprapubic catheter was placed for drainage and Penrose drains inserted into the space on each side of the bladder. The postoperative convalescence was uneventful. The suprapubic catheter and drains were removed and a urethral catheter was inserted for drainage on the fourth day. The urethral catheter was removed on the eighth day, at which time the patient voided an excellent

stream. He was discharged on the twelfth postoperative day with the suprapubic incision healed.

Case 6.—M. T., a 65-year-old man, at cystoscopy, revealed a calculus approximately 2 cm. in diameter in the bladder. Litholapaxy was attempted. During the instrumentation the patient complained of low abdominal pain with nausea, increased pulse rate and mild shock. A cystogram made on the operating table revealed a perforation of the bladder with a spread of the opaque medium into the retroperitoneal space. A suprapubic cystotomy was done and the perivesical space drained. Examination of the bladder revealed the perforation to be in a small diverticulum. Due to shock the diverticulum was not closed. There was a stormy febrile course with abdominal distention. Within a few days there was a profuse drainage of pus around the suprapubic tube. Another cystogram revealed a connection between the diverticulum and the lateral gutter posterior to the peritoneum. Apparently the perforation failed to close. A diverticulectomy was done and the abscessed area lateral to the bladder drained. The drainage persisted for several weeks, but eventually closed at which time the patient was asymptomatic.

Case 7, (Fig. 4).—In H. P., a 30-year-old man, the pelvis was fractured in an automobile accident. Eight hours following injury he was unable to void. Catheterization was attempted and obstruction was encountered in the region of the membranous urethra. Fifteen per cent skiodan® was injected through the catheter revealing a rupture of the urethra with extravasation of the medium in the region of the membranous and prostatic urethra and around the base of the bladder. A suprapubic cystotomy was done employing the two-sound technic. A sound was passed to the bladder. A small rubber tube was drawn through the urethra by threading it on the sound. It was used to pull a Foley catheter through the urethra. Slight tension was maintained on the catheter by strapping it to the thigh to approximate the severed ends of the urethra. Suprapubic and urethral catheters were removed at the end of two weeks. There was rapid closure of the bladder. Severe stricture of the urethra followed requiring frequent passage of sounds. The urethral catheter should have been employed for six to eight weeks to prevent the stricture that occurred.

Case 8.—J. B., a 56-year-old man, sustained a fracture of the pelvis and fracture of the right femur in an automobile accident. Following admission to the hospital he was unable to void. He was catheterized and grossly bloody urine was obtained. Cystogram revealed an intact bladder, and no evidence of escape of the opaque medium from the urethra. Urinary drainage was maintained by indwelling urethral catheter. The bleeding stopped within a few hours. Recovery was uneventful. The cystogram prevented the unnecessary exploration of an intact bladder.

Case 9.—J. R., a 70-year-old man, underwent a transurethral resection of the prostate under low spinal anesthesia. About 10 minutes before the completion of the operation pain developed in the bladder region. At this stage, without stimulants, the blood pressure rose from 110 to 160, and the pulse rate dropped from 70 to 60. Blood had been given during the operation; it was felt that this was probably a reaction from it. A perforation of the lower urinary tract was not visualized with the resectoscope. The possibility of a perforation was discussed, and it was decided against, as there was no shock or abdominal rigidity. A No. 24 Foley catheter was placed for drainage and the patient was returned to bed in good condition, complaining of pain in the suprapubic area. This was relieved by morphine, only to recur. Six hours later, there was definite tenderness over

Fig. 3

Case 5.—Cystogram showing the escape of opaque medium into the perivesical tissues. The prostatic capsule was cut through during prostatic resection.

Fig. 4

Case 7.—Opaque medium was injected into the catheter, revealing a rupture of the urethra with escape of the medium into the perineum and perivesical space.

the bladder, and it was felt that a perforation had occurred. With the patient in bed, 10 ounces of 10 per cent skiodan® were injected, a Foley bag was pushed back into the bladder, the patient was asked to attempt to void and an x-ray was made. The cystogram revealed the skiodan® to have escaped through the floor of the prostatic urethra, and it could be seen passing up around the bladder. A suprapubic cystotomy was done, the bladder was closed around the catheter, and drains were placed on each side of the bladder. During the first four postoperative days there was an elevation of temperature, with abdominal distention and nausea and vomiting. Nasal suction was employed during this time. On the fifth postoperative day the abdomen was flat, temperature normal and urinary output good. The patient was discharged on the fifteenth postoperative day, wearing an indwelling urethral catheter. There was no morbidity from the perforation of the prostatic capsule or the cystogram and the urinary complaints were relieved by the prostatic resection.

Case 10 (*Fig. 5*).—J. A., a 49-year-old man was seen fifteen hours following an automobile accident. X-ray revealed six fractures of the pelvis. The urethral catheter was blocked with blood and blood was passing around the catheter; the bladder was distended. Clots were aspirated from the bladder and a cystogram made using 10 per cent skiodan,® revealing a rupture of the urethra into the perineum and an extravesical rupture of the bladder.

A suprapubic cystotomy was done. Blood was given freely, as the patient was in shock from hemorrhage and trauma. There was complete separation of the urethra in the perineum and the bladder was torn from the prostate from 8 o'clock to 4 o'clock. All attachments of the prostate and urethra to the symphysis were torn loose and the hand could be inserted under the symphysis. The catheter had passed out of the urethra, between the prostate and symphysis and back into the bladder through the tear between the prostate and bladder.

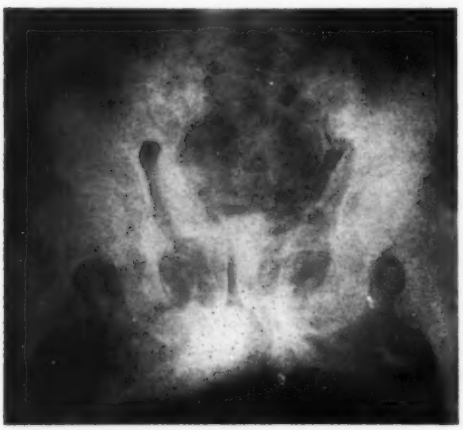


Fig. 5

Case 10.—Cystogram revealing the escape of opaque medium into the perineum from rupture of the urethra. Enough medium passed through the urethra to outline the bladder.

Working with a sound in the urethra and the little finger in the bladder neck, the sound was passed into the bladder and a Thackston bag pulled into place. The inflated bag pulled the prostate down. The tear between the bladder neck and prostate was closed and oxidized cellulose packed around it to control bleeding.

The patient recovered after a very stormy convalescence that was complicated by pneumonia and psychosis.

He wore an indwelling urethral catheter for ten weeks. This accident occurred eighteen months ago. The urine is now free of pus and the gram stain is negative for micro-organisms. The urethra permits the free passage of a No. 24 sound, and the urinary function and control are good. Due to multiple fractures of the pelvis he walks with a stick but is actively engaged in his profession as a teacher.

Case 11 (*Fig. 6*).—E. W., a 24-year-old man was seen two hours following a tractor accident. X-ray revealed a fracture of the pelvis. He was unable to void and was bleeding from the urethra. Catheterization was attempted and an obstruction encountered in the posterior urethra. Ten per cent skiodan® was injected into the catheter. The opaque medium extravasated into the perineum and perivesical tissues and enough passed through the prostatic urethra to outline the bladder.

A suprapubic cystotomy was done. There was complete severance of the membranous urethra. With a sound in the anterior urethra and one in the bladder neck, it was possible to bring the sounds together at the prostato-membranous junction and guide the urethral sound into the bladder. A catheter was attached to the sound and pulled through the urethra, and a Foley catheter was attached to it and pulled through the urethra into the bladder. The bag was distended and the

Fig. 6

Case 11.—Cystogram showing escape of opaque medium into the perineum and perivesical space.

ends of the urethra approximated by continuous gentle traction on the catheter. The bladder was closed water tight around a large suprapubic catheter. The urethral catheter was left indwelling for 30 days.

The urethra was first dilated at weekly intervals and then at longer intervals. It is now being dilatated at three-month intervals and permits the passage of a No. 24 sound. The case is of ten months duration and the urinary control is good.

Case 12.—G. F., a 45-year-old man was seen 12 hours following an automobile accident, in shock and with a rigid abdomen. A diagnosis of rupture of the bladder had been made, a urethral catheter was inserted and bloody urine was obtained. The bladder had been irrigated. At times more solution returned than was injected, and at other times less.

A cystogram was made using ten per cent skiodan.® The skiodan® passed into the perivesical tissues and the abdominal cavity, collected in crescent moon shapes around the intestines and failed to outline the bladder, confirming the diagnosis of rupture of the bladder.

At operation an intra- and extraperitoneal rupture of the bladder were found. The abdominal cavity contained about 2000 cc. of bloody fluid. The rupture in the bladder was closed on the peritoneal side with chromic catgut and on the mucosal side with plain catgut. The abdomen was closed without drainage and the bladder closed around a Pezzer catheter.

The postoperative course was stormy for three or four days, being complicated by pneumonia and abdominal distension. During this period antibiotics, chemotherapy, transfusions and nasal suction were employed. Eighteen months after the accident the bladder function is good, the urine free of infection and there is no disability from the fracture of the pelvis.

SUMMARY

Twelve cases of rupture of the lower urinary tract are reported, one instrumental, three operative, six traumatic and two gunshot.

Retrograde cystograms should be made in all suspected cases of rupture of the lower urinary tract. They will locate the rupture with a minimum of trauma and risk. The degree of morbidity and mortality depends upon prompt diagnosis and treatment.

During transurethral instrumentation or resection of the prostate, sudden pain of unexplained origin in the lower abdomen, which persists after emptying the bladder, is indicative of rupture with extravasation.

Treatment should consist of suprapubic cystotomy, exploration of the peritoneal cavity, and adequate drainage of the perivesical tissues when indicated with closure of the perforation where possible. The peritoneal cavity may be closed without drainage. Suprapubic drainage of the bladder may be employed if indicated.

In complete division of the posterior urethra, excellent results are secured with suprapubic drainage and the use of an indwelling urethral catheter with a bag to maintain light traction to bring the ends of the severed urethra together. The indwelling urethral catheter should be employed for 6 to 10 weeks to prevent stricture formation.

Blood or plasma should be given to combat hemorrhage and shock, and intravenous fluids to control dehydration and to secure an adequate urinary output. Chemotherapy and antibiotics should be administered to these patients.

There were no deaths in the twelve cases reported.

REFERENCES

1. McCauge and Samens: The Management of Traumatic Rupture of the Urethra and Bladder Complicating Fracture of the Pelvis. J. Urol., **52**:36-41, 1944.
2. Noland and Conwell: Acute Fractures of the Pelvis. J.A.M.A., **94**:174-179, 1930.

DISCUSSION (*Abstract*)

Dr. Samuel L. Raines, Memphis, Tenn.—Because of the speed with which we are traveling around the country in automobiles and other conveyances, we are encountering traumatic injuries and among them, ruptured bladders and urethras.

I agree with Dr. Robertson that it is easy to recognize an obviously ruptured bladder with bloody urine. But if there are none of the outstanding signs, if there is some rigidity and not too much history available, especially in an unconscious patient, the condition is rather often overlooked. Orthopedists and others should be on the alert to recognize it early.

Dr. Robertson mentioned the high mortality rate, 50 per cent in some series. He recognized that these were old figures and represented some of the pre-antibiotic days. Again, earlier diagnosis will reduce the mortality if we see the patients before shock has destroyed them. We should not lose many of these cases simply from rupture of the bladder or urethra, if they were properly handled.

If the patient should suddenly begin to complain of pain, particularly rigidity, it is time to stop, look and listen. I agree that a cystoscopic examination is a rather poor method of diagnosing a suspected rupture of the bladder.

I disagree with him upon the handling of the rupture of the posterior urethra.

He spoke of leaving the urethral catheter in for ten weeks. That may occasionally be necessary, but in most cases, I leave the urethral catheter in only as long as necessary.

SPLENECTOMY AS A METHOD OF TREATMENT IN A CASE OF FELTY'S SYNDROME*

By W. Howard Wilson, M.D., F.A.C.P.
and
Alfred T. Hamilton, M.D., F.A.C.S.
Raleigh, North Carolina

The purpose of this paper is to add to the progressing evidence that splenectomy is a treatment of choice in so-called splenic neutropenia. The case reported is one of atrophic polyarthritis, hypochromic anemia, neutropenia, fever and splenomegaly, or Felty's syndrome.[1] It seems probable to us that this syndrome, the hypersplenism of Eppinger,[2] and the primary splenic neutropenia of Wiseman and Doan,[3] are similar pathologic entities. In all of these disorders, splenectomy has been undertaken on occasion and has often provided convincing postoperative clinical and laboratory evidence that the operation was an effectual therapeutic maneuver.

CASE REPORT

Mrs. A. R., aged 57 years, and mother of nine children, was admitted to Rex Hospital, Raleigh, North Carolina, on March 4, 1950, with complaints of recurrent fever, progressive weight loss and exhaustion, polyarthritis, and extensive ulceration of the skin of the legs. She said that she had noted the presence of atrophic arthritis nine years previously and that, in 1944, she had received several blood transfusions, and a course of gold which had been discontinued of necessity because of anemia and a leucopenia. In 1947, a long period of unexplained fever had been temporarily controlled by transfusions but had recurred within a year. For the previous nine months she had had intermittent periods of spiking fever, attended by chills and pyuria which were not alleviated by penicillin. At this time her spleen was found to be enlarged. She had developed small reddish-blue papular lesions of the upper arms and lower legs which had increased in size, become vesicular and had broken down into progressively enlarging necrotic ulcers.

Physical examination revealed an undernourished, debilitated woman of late middle age who appeared seriously ill. There was evidence of anemia in the mucous membranes though the skin of her cheeks and nose had a hectic flush. Her heart and lungs were normal, and the blood pressure was 110/70. The spleen was enlarged to a point just above the left iliac fossa. There were advanced atrophic arthritic deformities of both hands and feet (*Fig. 1*). There were several small gangrenous ulcers of the right shoulder, the upper right arm and the right lower leg. There was an extensive gangrenous ulcer of the anterior surface of the left lower leg involving the anterior tibial musculature.

The white and red blood cell counts obtained are shown in the accompanying graph (*Fig. 2*). The blood platelet count which was done on admission to the hospital was 270,000. The erythrocyte fragility test was normal. Kline test of the blood, and sputum examinations were negative. Blood cultures taken on March 7 and on April 14, 1950, showed no growth. Cultures taken from the leg ulcers on two separate occasions produced pure colonies of pseudomonas aeruginosa. Standard serum agglutinations, typhoid, paratyphoid, Weil-Felix and Brucella, were normal. Bone marrow cultures taken May 10, 1950, were negative. Bromsulfalein retention at five minutes was 45 per cent, and at thirty minutes was zero. The cephalin flocculation test of liver function was plus four, nonprotein nitrogen was 36 mg. per cent, uric acid 2.6 mg. per cent, and blood calcium 8.8 mg. per cent. Urine examination showed one plus albumin, a faint trace of sugar, a few leukocytes, and a specific gravity of 1.006. Sedimentation rate at the end of one hour was 27 mm.

On admission to the hospital she was given vitamin B, vitamin C, iron, liver, and penicillin. Priscoline® (2-benzyl-4,5-amidazoline hydrochloride) was given orally, and unguent dressings were applied to the leg ulcers. On March 25, 1950, because of increasing severity and destruction of the ulcers of the left lower leg, a resection of gangrenous skin and muscle was undertaken and because of the almost inevitable foot drop which follows, a plaster cast was applied to that extremity. On that day, because there was no apparent benefit from the penicillin, this drug was discontinued and streptomycin was substituted. A bone marrow biopsy was obtained through a sternal puncture needle on April 10, 1950 and the findings were consistent with those of hypoplasia. Vitamin B_{12} therapy was instituted. The patient was given several blood transfusions as noted on the accompanying graph (*Fig. 2*). A vaccine extract developed from the pseudomonas cultures was administered in gradually increasing periodic doses after negative skin testing on April 18, 1950. Aureomycin was substituted for streptomycin on May 2, 1950.

Because of our conviction of the extreme necessity of an accurate marrow study, an operatively obtained sternal canal specimen was taken on May 8, 1950. This specimen revealed an extremely hyperplastic marrow which was considered normal qualitatively and morphologically.

On May 15, 1950, under local and later cyclopropane anesthesia, through a left subcostal incision, splenectomy was performed without difficulty. At the time of operation, blood specimens were taken from the splenic artery and splenic vein. The white blood cell count of the splenic artery blood was 2,800, that of the vein 1,850 per cm.

The patient's postoperative course was in all respects satisfactory. She rapidly regained appetite and strength; her temperature remained normal; the condition of the ulcers rapidly improved, her white and red blood cell counts remained normal, and were so at the time of her discharge from the hospital.

The patient was rechecked four months postoperatively. She had gained appetite, weight, and strength; her total blood cell counts had remained normal but there was a persistent granulocytopenia. She had been afebrile, and her arthritis had improved. The large ulceration of the left lower leg was incompletely healed

*Received for publication November 17, 1950.

but greatly improved, and she was ambulatory with the aid of a spring brace fitted to the lower leg. It was felt that healing could be accomplished by adequate depression of granulation.

It is evident from the graph that there had occurred, immediately prior to operation, some form of remission, represented by an improvement of the patient's blood picture and temperature. This was not clinically otherwise apparent and both the patient and her physicians continued to be convinced that her course was down-hill in character. One must consider the possibility of temporary transfusion effect, aureomycin efficacy, or beginning vaccine efficacy as possible causes of this remission. These may well have played a part in her continued good health four

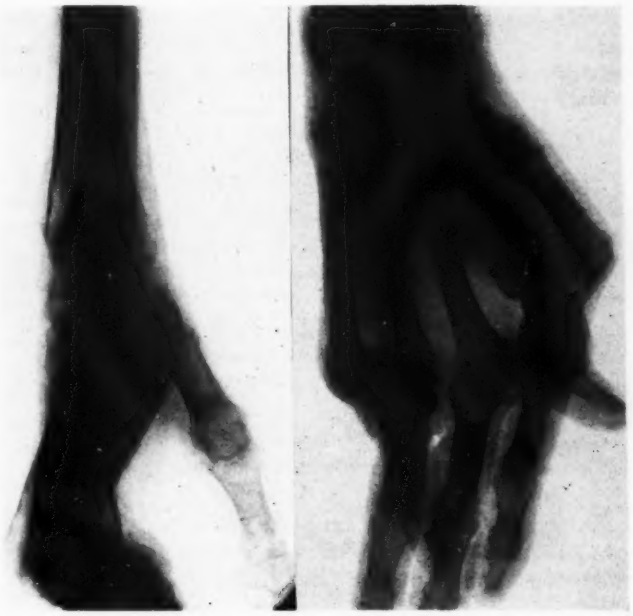


Fig. 1

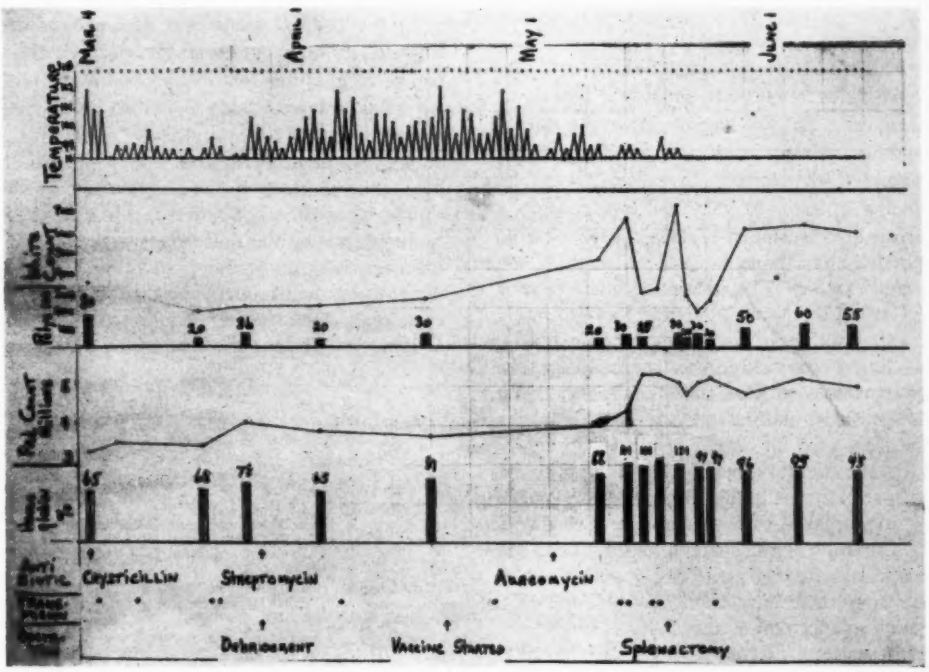


Fig. 2

months postoperatively, but in view of the experience of other investigators, it seems likely that splenectomy was essentially responsible for the latter.

COMMENT

The mechanism of the development of neutropenia in the presence of splenomegaly is unknown. The theory that there is produced by the hyperplastic spleen a hormonal substance, such as "leukolysin," suppressing bone marrow leukopoiesis, finds support in the not infrequent finding of an hypoplastic bone marrow. On the other hand, the belief that the enlarged spleen, by excessive leukocyte phagocytosis, is responsible for the neutropenia seems somewhat confirmed by the even more common finding of an hyperplastic bone marrow and by the higher leukocyte count in the blood of the splenic artery as compared with the lower one in the splenic vein. A third possibility worthy of preoperative consideration is that in any case of neutropenia with splenomegaly there may be at work a toxic substance, such as the toxin of pseudomonas aeruginosa, inducing myeloid aplasia with secondary splenomegaly. In the case herein reported, the original bone marrow aspiration biopsy clearly demonstrated myeloid hypoplasia. This finding, associated with the demonstration in the skin lesions of a pure culture of pseudomonas aeruginosa (which excretes an exotoxin capable of inducing aplastic anemia and neutropenia and presumably secondary splenomegaly) certainly suggested that the removal of the spleen might be catastrophic. The patient's course, however, was steadily downhill, with loss of weight, strength, and appetite, to such an extent that the clinical conviction was reached that death was inevitable without some change in therapy. On this basis, another bone marrow biopsy was done, this with an actual operative approach in which the sternal marrow canal was curetted. The material thus obtained showed extreme marrow hyperplasia with essentially normal qualitative morphological characteristics. Thus splenectomy was deemed safe and justifiable. However, since there have been reported several successful splenectomies for Felty's syndrome in the presence of marrow hypoplasia,[4] it is likely the procedure would have been undertaken had our original findings of hypoplasia been repeated, since a fatal outcome seemed assured without operation.

CONCLUSIONS

A significant advance in our understanding of splenic physiopathology is represented by the relatively new concept of the interrelationship of the spleen and the bone marrow in hypersplenism, or primary splenic neutropenia, or Felty's syndrome. It seems likely that the three terms embrace the same pathological entity. It is important to recognize that the disorder described is not due to marrow hypoplasia or aplasia but is the result of a diminution of bone marrow effectiveness either by a splenic hormonal inhibition of the bone marrow or by over aggressive phagocytosis on the part of the spleen. From a clinical standpoint, the presently available information would appear to justify the incorporation of hemolytic anemia, thrombocytopenic purpura, and splenic neutropenia under the inclusive term, hypersplenism, for which desirable therapy possibly includes splenectomy, since in all three instances the splenic origin of the disorder is implied experimentally and clinically, and the course of the disease usually can be interrupted by splenectomy. Cases in which splenomegaly is found should be carefully evaluated from the standpoint of anemia, leukopenia, and thrombocytopenia, and a satisfactory marrow biopsy should be obtained. Similarly, where there exists a numerical diminution in any or all of the cellular elements of the blood, and the bone marrow is qualitatively normal, splenomegaly, even when nonapparent, should be suspected and sought, and if found, managed by splenectomy.

BIBLIOGRAPHY

1. Felty, A. R.: Chronic Arthritis in the Adult, Associated with Splenomegaly and Leukopenia. Bull. Johns Hopkins Hosp., **35**:16-20, 1924.
2. Eppinger, Hans: Zur Pathologie der Milzfunktion. Berl. Klin. Wchnschs., **50**:1509-1512, 1572-1576, 2409-2411, 1913.
3. Wiseman, B. K.; and Doan, C. A.: A Newly Recognized Syndrome Caused by Excessive Splenic Leucolysis and Successfully Treated by Splenectomy. J. Clin. Invest., **18**:473, 1939.
4. Rogers, H. M.; Langley, F. H.: Neutropenia Associated with Splenomegaly and Atrophic Arthritis (Felty's Syndrome): Report of a Case in Which Splenectomy Was Performed. Ann. Int. Med., **32**:745, 1950.

309 Hillsboro Street

THE USE OF PROCAINE AMIDE IN VENTRICULAR TACHYCARDIA*

By R. MAXWELL ANDERSON, M.D.†
JOHN A. BOONE, M.D.‡
and
RALPH R. COLEMAN, M.D.§
Charleston, South Carolina

Ventricular tachycardia is not rare and the restoration of a normal rhythm by the use of quinidine has frequently been accomplished.[1] The response to quinidine often is slow and may be disappointing in emergencies. A rapidly acting drug may be lifesaving. Intravenous quinidine may alleviate this fault but is still considered potentially dangerous.[2] Procaine has been known to correct and prevent many cardiac arrhythmias during anesthesia,[3] and the recent release of an amide of procaine has provided us with a prompt-acting and apparently safe drug for use in ventricular arrhythmias.[4]

Procaine amide is not attacked by the plasma enzyme which hydrolyzes procaine and is consequently more prolonged in its action. It is largely excreted unchanged in the urine. Its action is probably due to a direct depressant effect on the ventricular muscle. The auricles appear to be little affected. The drug may be given orally or intravenously.

It is the purpose of this paper to report on the use of procaine amide in the treatment of two cases of ventricular tachycardia. The first case illustrates paroxysmal ventricular tachycardia complicating acute myocardial infarction. The second case illustrates persistent ventricular tachycardia in a heart that was anatomically normal.

CASE REPORTS

Case 1.—J. A., a 60-year-old white man was admitted to Roper Hospital on September 7, 1950. His chief complaint was of a dull chest pain which had begun three days previously and had become progressively more severe. The pain was intermittent until 11:00 p.m. of September 6, when he was awakened from sleep by a severe substernal pain.

Physical examination revealed a restless white male who was cold and clammy and appeared to be acutely ill. The chest was emphysematous, but the lung fields were clear. The heart was not enlarged, and there were no significant murmurs. Blood pressure was 120/70. The clinical impression was supported by electrocardiograms which were consistent with an acute posterior myocardial infarction.

The patient was treated with conventional measures and with dicumarol. His course was downhill and on September 10 he became disoriented, drowsy, and developed Cheyne-Stokes respiration. An elevation of temperature persisted and reached 102 degrees. Rales were heard in the right base, but the patient was too ill to have an x-ray of the chest. He required continuous oxygen and on September 14 became incontinent. Blood pressure remained at about 110/70, and the radial pulse was imperceptible at times. Liver enlargement became evident and rales persisted. On the night of September 16, the patient became cold and clammy, developed more marked pulmonary congestion, and his pulse was noted to be weak, irregular, and rapid. The next morning an electrocardiogram showed paroxysmal ventricular tachycardia (*Fig. 1,* E. K. G. 1). Quinidine sulfate 0.2 gram was given orally at 9:30 a.m., 0.4 gram at 10:00 a.m., and 0.8 gram at 12:00 noon. Frequent electrocardiograms revealed no change by 10:30 a.m., so the patient was started on procaine amide intravenously. Continuous direct writer electrocardiograms revealed the early lessening of ventricular irritability (E. K. G. 2-6) with resumption of a normal sinus rhythm (E. K. G. 7) within six minutes after only 325 mg. had been given. Increasing ventricular irritability recurred five minutes later as evidenced by the electrocardiogram (E. K. G. 8-10) and within one hour paroxysmal ventricular tachycardia had returned (E. K. G. 11). After 375 mg. of procaine amide was given intravenously, again the tachycardia quickly reverted to sinus rhythm. The ventricular tachycardia continued to recur whenever procaine amide was stopped for more than an hour. At 2:15 p.m. 200 mg. of procaine amide was added to the intravenous drip and was administered over the next two hours. Oral procaine amide was started at 2:30 p.m. in a dose of 500 mg. every two hours. Subsequently the patient received only 200 mg. intravenously, 100 mg. being given at 9:00 p.m. because of recurrence of bigeminy and 100 mg. being given at 1:00 a.m. September 18, because of bigeminy. All subsequent examinations have shown a sinus rhythm. Total procaine amide given intravenously was 1600 mg. Oral procaine amide was reduced to 250 mg. every three hours after the second dose of 500 mg. produced nausea. The dose was gradually reduced and the drug stopped on September 27. The patient was asymptomatic when discharged on October 8, 1950.

Case 2.—J. F. S., a 68-year-old white man, was admitted to Roper Hospital on August 22, 1950, complaining of abdominal and chest pain. In recent months he had noted increasing dyspnea, orthopnea, ankle edema, and general weakness.

Physical examination revealed a chronically ill white man, who was anxious and orthopneic. His blood pressure was 120/65. His heart was not enlarged. Pulse was 80 per minute. No murmurs or arrhythmias were heard. The abdomen was soft and the liver edge was barely palpable. There was three-plus ankle edema. An

*Received for publication November 27, 1950.

*The preparation used was supplied by E. R. Squibb & Sons, New York, New York, under the name, pronestyl hydrochloride.®

†Teaching Fellow in Cardiology at the Medical College of the State of South Carolina, under auspices of the U. S. Public Health Service.

‡Professor of Medicine at the Medical College of the State of South Carolina.

§Associate in Medicine, Medical College of the State of South Carolina.

electrocardiogram was normal. Hemoglobin was less than 7.5 grams.

Extensive studies revealed no cause for anemia except bleeding hemorrhoids. Transfusions and digitalization brought symptomatic relief with disappearance of edema and prompt rise in hemoglobin to 10.5 grams. Electrocardiograms showed prolongation of auricular ventricular conduction and flattening of T waves. However, the patient began to complain bitterly of intermittent right upper quadrant pain, and enlargement of the liver became evident. Digitalis was stopped on October 1, 1950, because of nausea and vomiting and the question of its necessity. Serum potassium on October 6 was 17.2 mg. per cent. A liver abscess was suspected and on October 20, under direct visualization, a needle was inserted into the right lobe and about 1,000 cc. of pale green pus was aspirated. The next day an electrocardiogram showed complete A-V dissociation with runs of nodal tachycardia

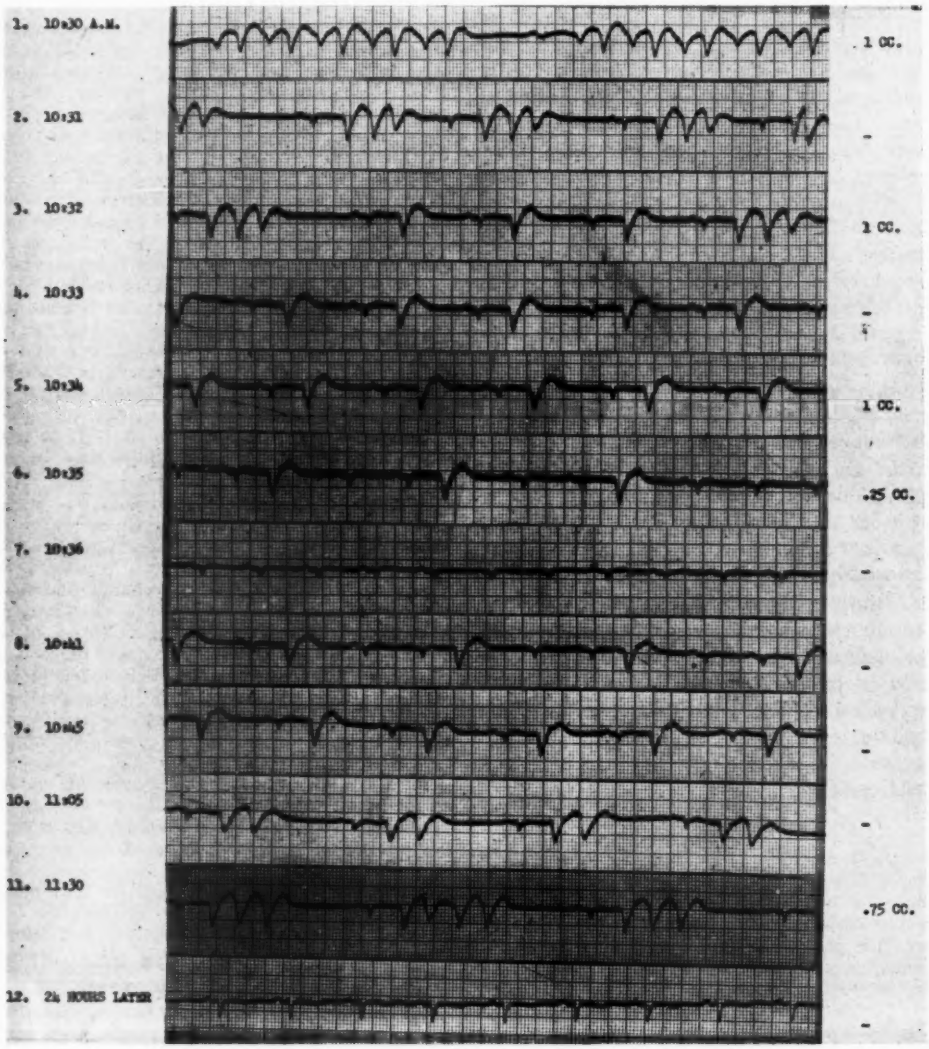


Fig. 1

Reversion of paroxysmal ventricular tachycardia to a normal sinus rhythm.

(1) Paroxysmal ventricular tachycardia.
(2-6) Lessening of ventricular irritability.
(7) Normal sinus rhythm.
(8-10) Increasing ventricular irritability.
(11) Paroxysmal ventricular tachycardia.
(12) Normal sinus rhythm.

and a few premature ventricular contractions at a rate of 150-160 per minute. The patient was given digitalis 1.0 gram in 24 hours and his pulse slowed to 80 per minute, but A-V dissociation persisted. On October 24, an electrocardiogram showed ventricular tachycardia arising in a focus from the left ventricle at a rate of 140 per minute (*Fig. 2*, E. K. G. 1). Procaine amide intravenously 100 mg. every minute reverted the rhythm

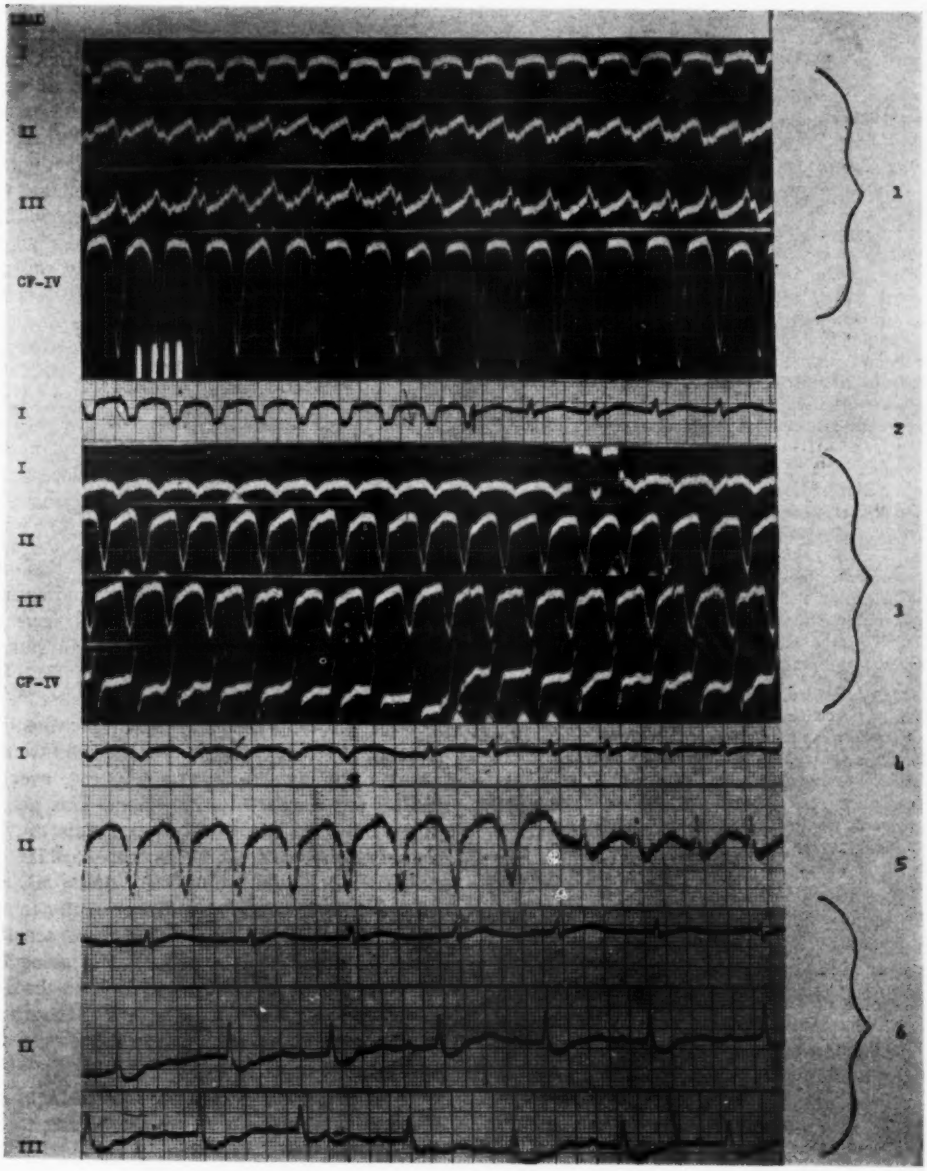


Fig. 2

Reversion of ventricular tachycardia from two foci to normal sinus rhythm.
(1) Ventricular tachycardia from focus in left ventricle.
(2) Reversion to sinus rhythm.
(3) Ventricular tachycardia from different focus.
(4) Reversion to sinus rhythm after gradual slowing of tachycardia.
(5) Reversion to sinus rhythm in lead II.
(6) Sinus rhythm in standard leads 10 hours after No. 5.

to sinus (No. 2) in two minutes after the ventricular tachycardia had been present constantly for three and one-half hours. Continuous electrocardiograms over the next three hours showed continuation of a slow sinus rhythm. About four hours after procaine amide was stopped, ventricular tachycardia was noted again and after two and one-half hours of sustained tachycardia the rhythm was instantly reverted with less than 100 mg. of procaine amide intravenously. Oral procaine amide 250 mg. every four hours was begun and the rhythm remained of sinus origin for forty-three hours in spite of the vomiting of at least two doses of oral procaine amide. On October 26, an electrocardiogram (No. 3) showed ventricular tachycardia arising from a different focus at a rate of 150 per minute. Intravenous procaine amide 100 mg. every minute reverted the rhythm to sinus (No. 4) in three minutes. A gradual slowing of the tachycardia to 120 per minute was observed before reversion occurred. Precautions were taken to make sure that the patient retained 250 mg. of procaine amide every four hours, but seventeen hours later he was again observed in ventricular tachycardia for the fourth time. Electrocardiogram No. 5 revealed the focus to be the same as that in No. 3 and procaine amide 200 mg. intravenously quickly reverted the rhythm to sinus. Procaine amide 200 mg. was added to the continuous intravenous drip which was administered over the next 12 hours. The oral dose was increased to 250 mg. every three hours. The pulse remained between 70 and 80 per minute and several electrocardiograms (No. 6) showed continuous sinus rhythm with an appearance more nearly like that of the original normal tracing than had been observed at any time during the preceding ten days. Sudden unexpected death occurred quietly just 24 hours after the last episode of ventricular tachycardia.

Autopsy revealed the heart to be grossly and microscopically normal. There was a thick-walled subhepatic abscess which communicated with a chronically inflamed gallbladder through a perforation in its wall. Biliary calculi were present in both the gallbladder and the abscess cavity. The liver weighed 1,240 grams and showed only minimal inflammatory changes in the areas next to the abscess.

COMMENT

Procaine amide (pronestyl hydrochloride®) was found to be extremely effective in causing reversion of ventricular tachycardia to sinus rhythm. A total of seven episodes of ventricular tachycardia in two patients responded promptly to the intravenous use of the drug. In the first case its activity was evanescent. Frequent small doses or continuous intravenous drip were necessary to maintain sinus rhythm before oral medication became effective. A more prolonged action of four hours was evident in the second patient. Oral use of the drug was less effective in this patient because of frequent nausea and vomiting, possibly not related to the drug. Electrocardiograms showed gradual diminishing of ventricular irritability in the first case as evidenced by relative decrease in the number of premature ventricular contractions to sinus beats while gradual slowing of the rate of ventricular tachycardia with sudden reversion to sinus rhythm was evident in the second case. The cause of the ventricular tachycardia was undoubtedly related to an acute myocardial infarction in the first case. The etiology is not certain in the second case. Auricular ventricular dissociation, nodal tachycardia, and premature ventricular contractions were present for twenty-one days after digitalis had been stopped and a slow ventricular rate was present for forty-eight hours after the second digitalization before ventricular tachycardia supervened. It is felt that digitalis probably was not responsible and the release of vagal tone or increase of accelerator tone by stimuli from the gallbladder region may have been the etiologic mechanism in the arrhythmias noted.

SUMMARY

The use of procaine amide (pronestyl hydrochloride®) in two cases of ventricular tachycardia is presented with detailed electrocardiograms and schedule of administration.

Addendum.—Since this manuscript was prepared, four additional episodes of paroxysmal ventricular tachycardia in two cases have responded promptly to procaine amide. Both cases had coronary artery disease and the first had suffered an acute myocardial infarction six weeks previously. One episode had failed to respond to moderate doses of oral quinidine, and intravenous procaine amide in a dose of 800 mg. over 10 minutes was required for reversion. This patient subsequently had two other paroxysms of ventricular tachycardia. One occurred while the patient was taking procaine amide orally 500 mg. every four hours but responded promptly to 100 mg. intravenously. The other episode occurred one week later when the patient was taking 250 mg. every four hours and reverted when the dose was increased to 500 mg. every two hours for two doses. This patient has been discharged and is doing well.

The other patient had had prolonged bigeminy, trigeminy, and a paroxysm of ventricular tachycardia while on large doses of digitalis and rhythm was promptly restored to sinus with intravenous procaine amide. Oral doses up to 500 mg. every two hours were required to suppress ventricular premature contractions but mild hallucinations appeared which disappeared when the drug was stopped.

Intravenous procaine amide has been used in many instances of ventricular premature contractions occurring in various frequencies and under electrocardiographic control it has never failed to revert the rhythm promptly to sinus.

REFERENCES

1. Armbrust, Charles A.; and Levine, Samuel A.: Paroxysmal Ventricular Tachycardia: A Study of One Hundred and Seven Cases. Circulation, **1**:28-40 (Jan.) 1950.
2. Hepburn, J. H.; and Rykert, H. E.: The Use of Quinidine Sulfate Intravenously in Ventricular Tachycardia. Amer. Heart J., **14**:620, 1937.
3. Harken, Dwight E.; and Norman, Leona R.: The Control of Cardiac Arrhythmia During Surgery. Anesthesiology, **2**:321-327 (May) 1950.
4. Mark, L. C.; Berlin, I.; Kayden, H. J.; Rovenstine, E. A.; Steel, J. M.; and Brodie, B. B.: The Action of Procaine Amide (N'-(2-diethylaminoethy) p-aminobenzamide) on Ventricular Arrhythmias. J. Pharmacol. & Exper. Therap., **98**:21 (Jan.) 1950.

CONTRAST BETWEEN THE ANOXIA OF EXPERIMENTAL PULMONARY ARTERIAL OCCLUSION AND OF TRACHEAL OBSTRUCTION WITH SPECIAL REFERENCE TO CHANGES IN THE S-T SEGMENT AND T-WAVE*

By JOHN T. CUTTINO, M.D.†
Charleston, South Carolina

The effect on the heart of various forms of obstruction of the pulmonary circulation has occupied the attention of numerous investigators. Despite this intense interest, agreement as to the mechanism of death under these circumstances has not been reached. However, in cases of sudden death resulting from massive occlusion of the pulmonary circulation, most observers support the mechanical explanation for the cause of death. In this hypothesis it is postulated that an anoxia of the myocardium is produced as a result of two concomitant processes. On the one hand, the supply of blood to the coronary arteries is halted because of failure of return of oxygenated blood from the obstructed pulmonary circulation. At the same time the rising pressure in the right ventricle produced by the obstructed pulmonary artery causes a failure of flow of blood from the coronary sinuses. Thus, failure of circulation in the myocardial blood supply produces anoxia. It is this anoxia which causes the cessation of the myocardial contractility.

Inasmuch as the anoxia appears to be the fundamental basis of this concept, it seemed desirable to determine whether there appeared any difference in the effect of anoxia produced by different methods. To this end, an experiment was designed whereby the effect on continuous electrocardiographic tracings of dogs dying of obstruction of their pulmonary artery could be contrasted with the effect on the electrocardiographic tracings of dogs dying of obstruction of the trachea.

MATERIALS AND METHODS

Dogs were anesthetized by the intravenous injection of the veterinary pentobarbital sodium in dosage of 0.5 mg. per kilogram of body weight and augmented during the course of the experiment as necessary. Peripheral arterial and venous pressures were recorded on kymographic tracings after cannulization of the femoral artery and jugular vein. Air under constant positive pressure of 8 cm. of water was supplied to the lungs through a tracheal cannula attached to a compressed air pump. A tube was interposed in this system by means of a Y tube and immersed under 8 cm. of water. The pulmonary artery was dissected from the aorta sufficiently to permit the passage of a tape ligature on an aneurysm needle. Lead II of the electrocardiogram was chosen on the assumption that it represented the sum total of electropotentials of both sides of the heart. Control tracings were taken before and after the operative procedure and allowed to run continuously throughout the ligation of the pulmonary artery.

The effects of the electrocardiographic tracings in the case of obstruction of the trachea were obtained by placing a Kelly clamp on the trachea after simulating as nearly as possible the conditions of the previous experiments.

SUMMARY OF DATA ON LIGATION OF THE PULMONARY ARTERY

In only six of 18 dogs were the experimental conditions judged to be of sufficient accuracy to render results suitable for analysis. Various failures such as anesthetic and operative mortality and technical failures of the electrocardiogram and blood pressure measurements prevented the inclusion of twelve of the experimental animals.

*Received for publication October 19, 1950.

*From the Department of Pathology, Duke University School of Medicine, Durham, North Carolina.

*This work was supported by U. S. Public Health Service Grant-in-aid RG-114.

†The author wishes to express appreciation to Drs. J. L. Hansen, F. A. Marzoni, G. J. Race, and I. Young for their generous assistance in the operative procedures.

Gross Observations.—In all animals dying from ligation of the pulmonary artery there was a rapid initial drop in peripheral blood pressure from control level to about 20 to 60 mm. of mercury within the first minute. In Dog 6 there was an initial elevation of peripheral blood pressure with additional secondary rise at 24 seconds, but in other particulars the fall was uniform with the average. At the lower levels there was a gradual decline of peripheral blood pressure until zero levels were reached in from 3 to 5 minutes. The behavior of the peripheral blood pressure in these experiments is in general agreement with other observers[1 2 3 4] and may be interpreted as a rapid attainment of shock levels within a minute with persistence of lowered peripheral blood pressure until death released the vascular tone of the arterioles. The average duration of visible contractions of the heart was 4 minutes following the ligation of the pulmonary artery. In no instance was there gross arrhythmia, and in only one case did appreciable fibrillary twitchings of the articles appear.

Autopsy Observations.—The viscera were consistently engorged with blood. The hearts showed a soft flabby consistency with dilatation of the right ventricle. Histologically, there was a hyaline droplet degeneration of the sarcoplasm in all cases. Three of the 6 animals showed small perivascular hemorrhages in the cerebral hemispheres. These hemorrhages were of greater frequency in the basal ganglia. All of these changes are interpreted as compatible with a severe hypoxia.

Electrocardiographic Observations.—The alterations in the electrocardiographic tracings following the ligation of the pulmonary artery were so consistent as to form a pattern. Within a time period of from 6 to 10 seconds the S-T segment became depressed and the T-wave became inverted. After a variable period of from 40 to 150 seconds this inversion of the T-wave was restored to control potential and thereafter increased in amplitude. Another commonly observed but less consistently found alteration was the diphasic character of the QRS-complex. In two animals this alteration transiently appeared at 9 and 10 seconds respectively. In none of the experiments did electrocardiographic evidence of fibrillation or other significant arrhythmia appear except in the terminal phases. There was no evidence of primary cardiac arrest.

To illustrate these changes the protocol of one of the experiments is included.

PROTOCOL OF EXPERIMENT

Dog 10.—A 15.5 kg. male dog was anesthetized and after the cannulization of femoral artery and jugular vein the tracheal cannula was inserted. The cannula was attached to the compressed air apparatus permitting entry into the chest. The pulmonary artery was freed of its attachment to the aorta. A tape ligature was placed about the pulmonary artery and tied. Short control electrocardiographic tracings were taken at various stages in the operative procedure and allowed to run continuously from just before the ligation until 20 minutes afterwards. During the first minute following the tie of the pulmonary artery the peripheral blood pressure fell from 110 mm. to about 60 mm. of mercury and at 3 minutes fell to zero. No visible contractions of the heart were seen after 5 minutes. The heart showed excessive dilatation of the right side, but throughout the experiment no gross fibrillation was observed.

Electrocardiograph.—(*Fig. 1*) The resting rate under anesthesia was 140, and the control rate after replacement of the ligature but before the tie was 150. Between the third and sixth second after the tie there were five QRS complexes which showed excessive amplitude, the greatest being 32 mm. These were followed immediately by an inverted T-wave at 6 seconds. Following this the QRS complex was diphasic, the T-wave recovered its upright configuration, and the amplitude was comparable to that of the control. Between the third and seventh second the complexes became disorganized with the P-wave properly timed but frequently falling within the period of refraction. At 9 seconds the characteristic picture emerged consisting of a P-R interval of 0.08 second, diphasic QRS complexes, sloping S-T segment of 0.06 second in duration, which ended in an inverted T-wave. The rate of both auricle and ventricle was 240. At 16 seconds the S-T segment remained depressed, but the T-wave became upright. At 21 seconds the R-wave was 3 mm. in amplitude, the S-wave 10 mm. in amplitude. The S-T segment was isoelectric and the T-wave began scaling in amplitude to 9 mm. The auricular rate was 190, the ventricular rate 190. The P-R interval was 0.11 second, the S-T segment 0.08 second. At 40 seconds the rate fell to 80, the QRS complexes were now diphasic, the P-R interval was 0.12 second, the S-T segment 0.10 second, the T-wave was 1 mm. in amplitude. At 56 seconds the rate dropped to 30 per minute; the P-waves were irregular in rhythm and contour. At 88 seconds occurred an auricular fibrillation which lasted 11 seconds. At 107 seconds the auricular rate was 90, the ventricular rate was 40, the QRS complexes were upright, and the T-wave showed a very high voltage. At 150 seconds nodal rhythm was restored; auricular rate was 150, ventricular rate 150. P-R interval was 0.12 second, the S-T segment 0.10 second, the T-wave had high voltage, the amplitude of the R-wave was 7 mm., that of the T-wave was 13 mm. At 265 seconds the auricular rate was 108, the ventricular rate 54. There was a one to one drop beat. The R-wave was 8 mm. in amplitude and the T-wave 16 mm. in amplitude. At 300 seconds a notching of the R-wave appeared, the amplitude of the R-wave was 25 mm. and

the T-wave was 7 mm. The ventricular rate was 70, the auricular rate 110. There was dissociation of P-waves and QRS complexes; the S-T segment was depressed. At 7 minutes the auricular rate was 110, the ventricular rate 30, showing a one to three drop beat. The R-wave was still notched. At 8 minutes the

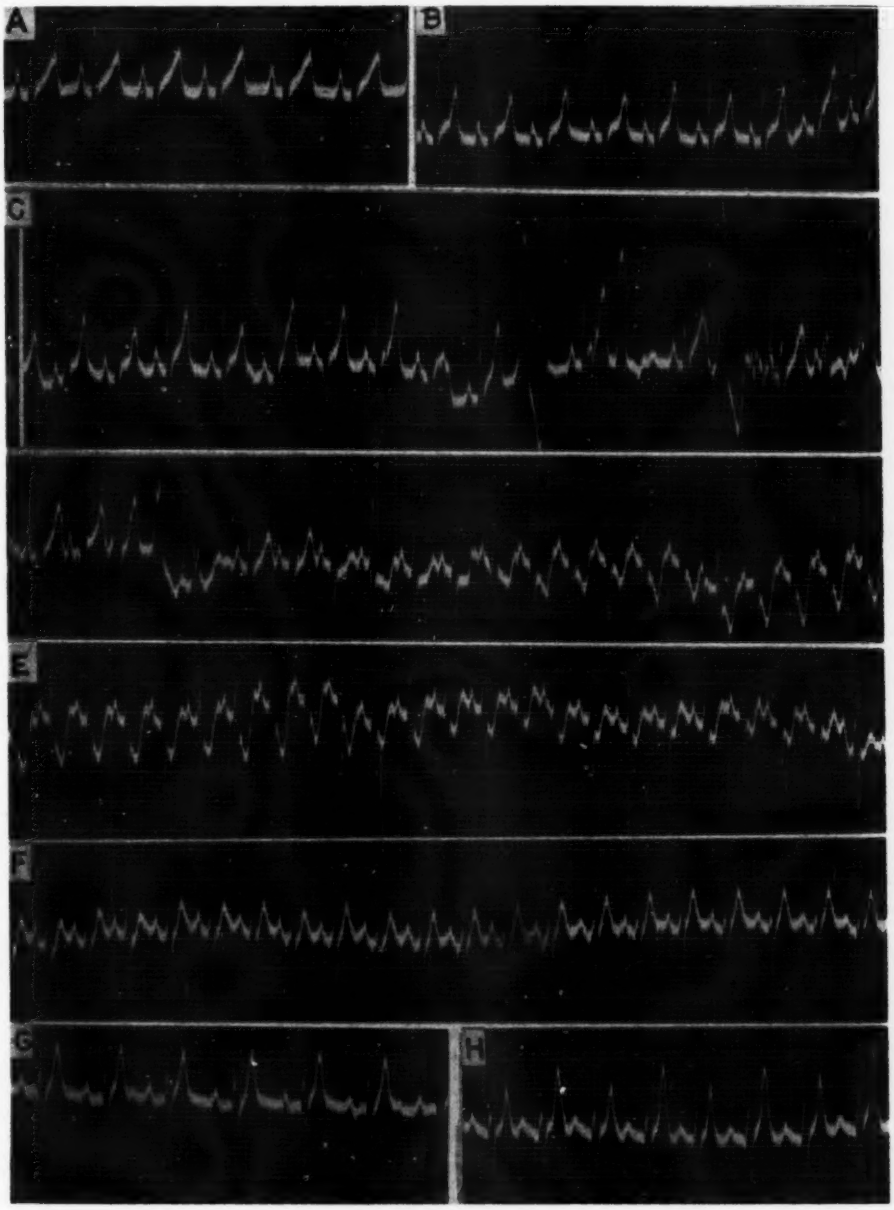


Fig. 1

The electrocardiographic tracings on Dog X showed: (A) the control prior to operation, and (B) the control after operation. The ligation of the pulmonary artery occurred at the line on (C). (D) is at 6 seconds, (E) is at 12 seconds, (F) is at 18 seconds, (G) is at 34 seconds, and (H) is at 70 seconds after the ligation.

auricular rate was 100, the ventricular rate 20, with about one to seven drop beats. The dissociation of the auricular rhythm and the ventricular rhythm continued throughout the rest of the time covered by the electrocardiographic tracing. The rate varied but without significant alteration in the character of the complexes.

Autopsy.—Grossly, all the viscera showed marked venous engorgement. There was great dilatation of the right side of the heart and a passive congestion of the liver. The organs were otherwise not remarkable.

Microscopically, the heart sections showed focal accumulations of hyaline droplets in the myocardial fibers. Fat stains of the heart showed irregular areas of sudanophilic granules in the myocardial fibers. There were numerous hemorrhages in the brain, but these were confined to the perivascular spaced. Venous channels of all organs were engorged. The passive congestion was marked in the liver.

SUMMARY OF DATA ON CLAMPING OF THE TRACHEA

In this group of experiments four of ten experiments were considered of sufficient reliability to warrant analysis. In addition to the difficulties encountered in the first group of experiments the interference of the forceable attempts at respiration was the cause for rejection of six of these experiments.

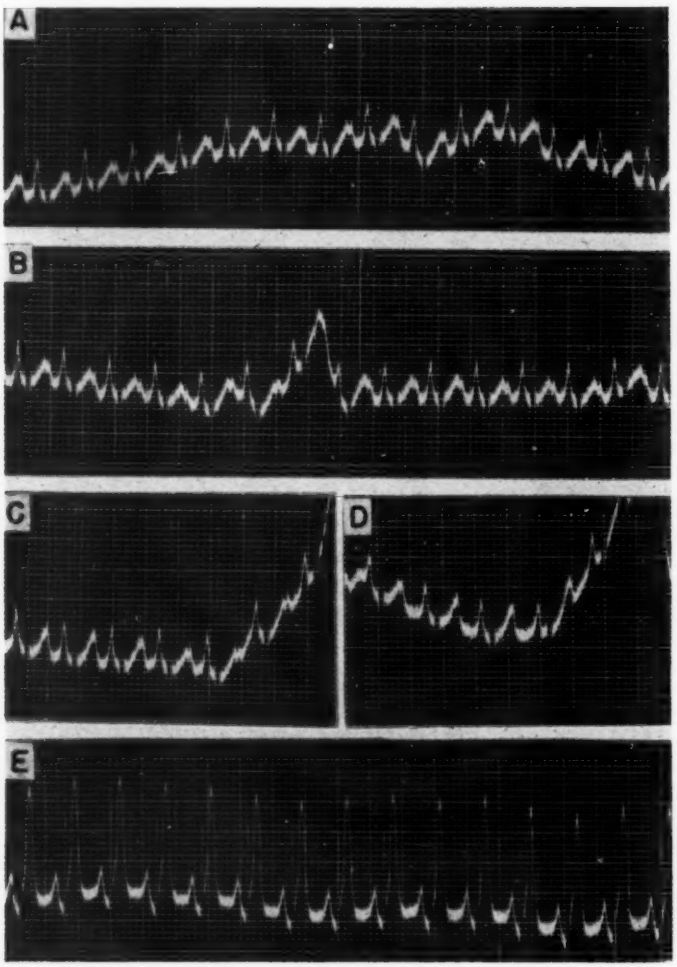


Fig. 2

The electrocardiographic tracings on Dog G showing: (A) the control before operation and 2 seconds after the occlusion of the trachea at (B); (C) is 37 seconds, (D) is 58 seconds and (E) is 110 seconds after the occlusion.

Gross Observations.—Within from 50 to 100 seconds there occurred an initial rise in the peripheral blood pressure of 3 of the 4 dogs from around 110 up to between 130 to 160 mm. of mercury. In one animal the blood pressure fell during the first 80 seconds to 76 mm. of mercury. This was followed by a gradual rise to 130 mm. of mercury at 140 seconds. From these peaks the blood pressure in all animals fell rapidly to the zero level within 5 minutes of the placement of the clamp on the trachea. In all animals there was vigorous contraction of the intercostal muscles despite the open thorax. The heart's action was very vigorous during the first two to three minutes gradually losing force in its contraction until the cessation of visible heart beats at seven minutes.

Electrocardiographic Observations.—The rate of the heart beat was accelerated to about 220 beats per minute within the first 60 seconds gradually slowing as the experiment proceeded. In all

of these animals there was accentuation of the P-wave in the period immediately after the clamping of the trachea. In one of the animals there was notching of the P-wave. In three of the four animals diphasic QRS complexes of greater than normal amplitude appeared within the first 45 seconds. In none of the animals did depression of the S-T segment or inversion of the T-wave appear, but characteristically there appeared an increase in the amplitude of the T-wave. The average interval between the application of the clamp and the beginning of this increase in height of the T-wave was between 60 and 90 seconds. The other findings were so scattered as not to seem characteristic. There were various arrhythmias including heart block in the terminal phases of the experiment, but no pattern of abnormal rhythm could be correlated.

Autopsy Observations.—Grossly, there was marked passive congestion in all viscera. The hearts were dilated, especially the left ventricle and auricle. In one animal petechiae were found in the peripancreatic adipose tissue and in another animal there were small hemorrhages in the spleen. The expected atelectasis of the lungs was found and in one animal there were a few small hemorrhages scattered throughout the lungs.

Microscopically, sections from all the viscera showed great passive congestion. There were a few scattered microscopic hemorrhages in the myocardium of one of these animals and a different animal showed petechiae in the brain. The histologic examination was otherwise not remarkable.

A typical protocol is included to illustrate this type of experiment.

Dog G.—This 27 kg. dog was given 4 cc. of veterinary pentobarbital sodium. The thorax was opened to provide comparable experimental conditions to the experiments on ligation of the pulmonary artery. Instead of the use of the positive pressure apparatus, however, the trachea was clamped by the application of a Kelly clamp at the level immediately below the thyroid cartilage. Under direct vision the heart was seen to accelerate as soon as the trachea was clamped, and there seemed to be an increase in the power of contraction during the earlier phases of the experiment but gradually it appeared to lose its vigor. The blood pressure fluctuated slightly between 88 and 108. It gradually began rising at 20 seconds after the clamping of the trachea with a pronounced rise at about 90 seconds to a peak of 160 mm. of mercury. Within 111 seconds of the clamping of the trachea it began falling to normal level but continued on down to zero level at about 135 seconds. There was only a slight rise in venous pressure.

Electrocardiograph.—(*Fig. 2*). In the control electrocardiographic tracing, the rate was 220, there was a notched P-wave with a diphasic QRS complex and the T-wave was upright. At 11 seconds following the tie the rate was 200. The notched P-wave noted in the control continued. There was a continuation also of the diphasic QRS, with an upright T-wave. However, the QRS complex was prolonged, being 0.04 second duration; the R-wave had an amplitude of 15 mm. At 37 seconds both the auricular and ventricular rate was 220, the T-wave continued upright, the amplitude of the R-wave had increased to 19 mm. At 58 seconds the rate was 180 per minute. There were no arrhythmias, the T-wave was still upright, the R-wave had an amplitude of 18 mm. At 110 seconds the T-wave became exaggerated with duration of 0.12 second. At 150 seconds the rate was 220; the amplitude of the T-wave was 15 mm., the R-wave was 13 mm., the QRS complex was 0.02 second duration, the T-wave was 0.08 duration. At 180 seconds the rate was 180, the P-R interval was 0.06 second, the S-T segment was 0.05 second duration with the T-wave being 0.08 second. The R-wave was 12 mm. in amplitude and the T-wave was 15 mm. in amplitude. At 210 seconds the rate was 80, the P-R interval was 0.08 second, the S-T segment was 0.08 second, the T-wave was 0.11 second. The R-wave had an amplitude of 11 mm., the T-wave an amplitude of 20 mm. There followed a gradual lengthening of P-R interval until 230 seconds after the clamping of the trachea had been reached. At this point the P-wave began to disappear with an occasional QRS complex followed by a T-wave.

Autopsy.—Grossly, all organs in this animal showed marked congestion. The heart was soft and flabby without gross lesions. The lungs showed atelectasis and here and there a few small reddish areas, grossly interpreted as hemorrhage.

Microscopically, histologic sections were examined of the brain, heart, spleen, liver, lungs, kidney, pancreas, and bladder. The heart showed marked congestion of the vessels, but no other lesions were found except in the brain. There were found small hemorrhages in the perivascular spaces of Virchow-Robin with congestion of the vessels. All other tissues showed a marked congestion.

COMPARISON OF FINDINGS

In comparing the data on the two types of experiments, there are similarities and a few sharp differences. In both the experiments concerned with pulmonary arterial ligation and the experiments utilizing tracheal occlusion, the lapse of time between the critical maneuver and death was roughly the same. The peripheral blood pressure reached zero level at about 5 minutes in both groups. However, the behavior of the peripheral blood pressure varied in that there was an initial elevation of pressure in the group of dogs dying of tracheal occlusion. This finding was not present in the experiments concerned with pulmonary arterial ligation. There appeared a pronounced acceleration of the heart rate in

the group of tracheal occlusions which was not impressive in the group of pulmonary arterial ligation. Diphasic QRS complexes were occasionally found in both groups but with greater relative frequency in the experiments with tracheal occlusion. Perhaps the most impressive similarity was the increasing amplitude of the T-wave in both types of experiments. The only difference in this finding was that it was slower in development in the experiments with tracheal occlusion. The greatest difference between results of the two types of experiments was found in the behavior of the S-T segment and the T-wave. In all of the experiments with pulmonary arterial ligation there appeared depression of the S-T segment and inversion of the T-wave. This finding appeared in none of the experiments concerned with tracheal occlusion. The inverted T-wave in all of the experiments with ligation of the pulmonary artery became upright and the amplitude of the T-wave increased in the same fashion as was observed in the experiments with tracheal occlusion.

COMMENT

The value of the electrocardiographic study of minor obstructions of the pulmonary circulation has been found to be variable.[3 5 6] Even in the experiments concerned with massive obstruction of the pulmonary circulation there is some disagreement as to the typical electrocardiographic pattern. However, most investigators have observed alteration in the S-T segment and the T-waves.[3 7 8 9 10 11] These alterations, while not altogether uniform, have usually shown depression of the S-T segment with inversion of the T-wave. The interpretation that this change in S-T segment and T-wave is concerned with right ventricular strain and more specifically anoxia of the myocardium has become increasingly acceptable. That this explanation may be accepted seems logical especially inasmuch as King and Hensen[12] found this change also characteristic of anoxia produced by ligation of the coronary arteries.

In the experiments of this report the depression of the S-T segment and the inversion of the T-wave was found with remarkable consistency in the group of dogs dying of anoxia produced by ligation of the pulmonary artery. On the other hand, none of the dogs dying as a result of anoxia produced by occlusion of the trachea showed this alteration in the S-T segment and T-waves. However, at the time at which reversion of the T-wave to an upright position with its subsequently increasing amplitude occurred in the pulmonary arterial ligation experiments, increasing amplitude of the T-wave occurred in the tracings of dogs dying as a result of occlusion of the trachea. This seemingly contradictory evidence is clarified when contrasted with the experiments of Kountz and Gruber,[13] who found that when hearts were perfused with anoxemic blood the T-wave became inverted as the unsaturation with oxygen reached 30 per cent with return of the upright configuration as the anoxemia progressed. Later the amplitude of the T-wave was shown by Kountz and Hammouda[14] to be correlated with the excess of carbon dioxide.

In view of these observations it appears that the initial anoxia of the myocardium resulting from the failure of return of the blood from the lungs produces the depression of the S-T segment and inversion of the T-wave with subsequently accumulating carbon dioxide producing an increase in amplitude of the T-wave. That these same changes do not occur in the cases of clamped trachea seems best explained by the fact that blood is still circulating through the myocardium. This blood, while its oxygen component is diminished, contains relatively large quantities of carbon dioxide which has not been cleared from the blood in the lungs as is the case in experiments dealing with obstruction of the pulmonary artery. This latter fact produces the changes characteristic of excess carbon dioxide before the changes referable to anoxia can be produced. Since the forms of these alterations in the electrocardiogram are antagonistic, the changes referable to anoxia are prevented from appearing.

CONCLUSIONS

(1) Study of continuous electrocardiographic tracings of dogs dying of anoxia as a result of ligation of the main pulmonary artery consistently showed depression of the S-T segment and inversion of the T-wave within 6-10 seconds followed by restoration of their normal configuration within from 40 to 150 seconds and by significant increase in amplitude of the T-wave. By contrast, dogs dying of anoxia due to tracheal obstruction failed to show the depression of the S-T segment and inversion of the T-wave but showed comparable increase in amplitude of the T-wave.

(2) The evidence from these experiments tends to support the theory that anoxia of the

myocardium is the chief factor in the causation of death in massive pulmonary embolism.

REFERENCES

1. Haggart, G. E.; and Walker, A. M.: The Physiology of Pulmonary Embolism as Disclosed by Quantitative Occlusion of the Pulmonary Artery. Arch. Surg., **6**:764, 1923.
2. Hall, G. E.; and Ettinger, G. H.: An Experimental Study of Pulmonary Embolism. Canad. Med. Assn. J., **28**:357, 1933.
3. Mendlowitz, M.: Experimental Pulmonary Embolism. J. Thoracic Surg., **8**:204, 1938.
4. Waring, J. J.; and Black, W. C.: Syndrome of Obstruction in the Lesser Circulation. Am. J. M. Sc., **187**:652, 1934.
5. Flasher, J.; Essex, H. E.; and Barnes, A. R.: An Experimental Study of Acute Pulmonary Arterial Obstruction with Special Reference to the Precordial Electrocardiogram. Am. Heart J., **36**:882, 1948.
6. Cabitt, H. L.; Altschule, M. D.; Zamcheck, N.: Cardiac Arrhythmias and Other Electrocardiographic Changes During Experimental Pneumonectomy. J. Thoracic Surg., **12**:31, 1942.
7. Durant, T. M.; Ginsburg, I. W.; and Roesler, H.: Transient Bundle Branch Block and Other Electrocardiographic Changes in Pulmonary Embolism. Am. Heart J., **17**:423, 1939.
8. Semisch, C. W. III; and Merves, L.: Electrocardiographic Studies on Artificially Produced Pulmonary Artery Occlusion in Human Beings. Arch. Int. Med., **69**:417, 1942.
9. Krumbhaar, E. B.: Note on Electrocardiographic Changes Accompanying Acutely Increased Pressure Following Pulmonary Artery Ligature. Am. J. Med. Sci., **187**:792, 1934.
10. Wood, P.: Pulmonary Embolism: Diagnosis by Chest Lead Electrocardiography. Brit. Heart J., **3**:21, 1941.
11. Malinow, M. R.; Katz, L. N.; Kondo, B.: Is There A Vagal Pulmonocoronary Reflex in Pulmonary Embolism? Amer. Heart J., **31**:702, 1946.
12. King, B. G.; and Hensen, M.: Electrocardiographic Changes in Fulminating Anoxia. J. Aviation Med., **18**:3, 1947.
13. Kountz, W. B.; and Gruber, C. M.: The Electrocardiographic Changes in Anoxemia. Proc. Soc. Exper. Biol. & Med., **27**:170, 1929.
14. Kountz, W. B.; and Hammouda, M.: Effect of Asphyxia and of Anoxemia on the Electrocardiogram. Amer. Heart J., **8**:259, 1932.

CONGENITAL MALFORMATIONS OF THE HEART AMENABLE TO SURGERY*

WITH SPECIAL EMPHASIS ON ISOLATED VALVULAR PULMONARY STENOSIS WITH CLOSED OR PATENT FORAMEN OVALE

By J. FRANCIS DAMMANN, JR., M.D.†
Los Angeles, California

The correct diagnosis in congenital malformations of the heart amenable to surgery can be made with relative ease if the physician has an understanding of the underlying pathology. Such an understanding will enable him to predict the stresses and strains on the circulatory system caused by a malformation and to predict the clinical course, the physical findings and laboratory data that are present. Advanced diagnostic tests such as cardiac catheterization and angiocardiography are not usually essential.

Patency of the ductus arteriosus is a persistence of a normal fetal circulatory pathway between the pulmonary artery and aorta into extrauterine life. Since systemic arterial pressure is normally high and pulmonary arterial pressure is normally low, a large arteriovenous shunt of blood will take place from the aorta to the pulmonary artery. The volume of shunt will depend upon the size of the ductus, the angle at which it arises from the aorta, and the difference between the systemic and pulmonary arterial pressures. The volume of blood returned to the right ventricle and expelled by the right ventricle is close to normal. The volume of blood returned to the left auricle and expelled by the left ventricle is equal to the volume of blood flowing through the systemic circulation plus that amount of blood which is shunted from aorta to pulmonary artery. Hence, the left ventricle has a greater amount of work to do. The right ventricle is under increased strain only if pulmonary arterial resistance and hence pulmonary arterial pressure are elevated. Since both systemic systolic and diastolic pressures are higher than normal pulmonary pressures the flow of blood is both in systole and diastole. A loud, continuous, machinery-like murmur is present over the base of the heart. Pulse pressure in the extremities is high. Fluoroscopy and x-ray reveal increased pulmonary circulation, over-activity of the aorta and some enlargement of the left ventricle and possibly left auricle. The electrocardiogram is normal or shows a tendency to left axis deviation and left ventricular hypertrophy. Angiocardiography reveals recirculation through the lungs. Catheterization reveals a rise in oxygen content in the pulmonary artery indicating the presence of an arteriovenous shunt in this region. Treatment is ligation of the patent ductus arteriosus.

Coarctation of the aorta is a constriction of the aorta most commonly found at the level of the junction of the ductus arteriosus with the aorta. Such a lesion makes it difficult for arterial blood to reach the lower extremities. Circulation to the lower extremities must be by means of collateral vessels. Because of the resistance of the coarctation or of renal ischemia, hypertension of the upper extremities develops. As one might predict the strain on the heart is entirely on the left side. The femoral pulse is absent or weak. There is hypertension in the upper extremities and hypotension in the lower extremities. A systolic murmur of variable intensity and quality is usually found over the back and over the pre-

*Read in General Clinical Sessions, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

†Acting-Physician-in-Charge, Cardiac Clinic, Harriet Lane Home, Johns Hopkins Hospital, Baltimore, Maryland, from July 1, 1950 to December 31, 1950. Now Assistant Professor of Pediatrics, University of California School of Medicine, Los Angeles, California.

cordium. X-rays reveal enlargement of the left side of the heart. Over the age of 11, notching of the ribs may be seen due to the enlarged, pulsating intercostal vessels which are acting as collaterals. The electrocardiogram is normal or reveals evidence of left ventricular hypertrophy. Angiocardiography reveals an increase in size of the collateral vessels and demonstrates the site of the coarctation and the typical post-stenotic dilatation of the aorta. Simultaneous brachial and femoral artery pressure recordings reveal hypertension in the upper extremities, a low, flattened pulse wave with a definite delay in onset from the femoral artery. Treatment is resection of the coarctation.

A double aortic arch represents a failure of development of the normal aortic arch. Both a right and a left aortic arch persist. These bifurcate from a common trunk at the base of the heart, one passing anterior to the trachea and to the left, the other passing to the right posteriorly and then crossing the midline in a retroesophageal position to join the left arch. In this way the trachea and esophagus are bound in a vascular ring. Additional cardiac malformations may or may not be present. Symptoms are dependent upon the size and configuration of the two arches. If the ring is tight there is constriction of the trachea and the esophagus. Dysphagia and tracheal obstruction are noted. X-ray with barium in the esophagus will reveal marked indentation of the esophagus in the region of the ring. Other varieties of vascular ring producing a similar syndrome are: (1) right aortic arch with a left descending aorta and a closed or patent ductus arteriosus on the left; (2) anomalies of the great vessels arising from the arch. The treatment is severance of one of the arches or the anomalous vessel to relieve the obstruction.

In the tetralogy of Fallot there is an infundibular or valvular pulmonary stenosis, a high ventricular septal defect, an overriding aorta arising from both ventricles and hypertrophy of the right ventricle. Since the right ventricle has to force blood either through a stenotic pulmonary outlet or into the aorta at systemic rather than pulmonary artery pressure the right ventricle hypertrophies. Because there is a reduction in pulmonary blood flow dyspnea is present. Since venous blood from the right ventricle is shunted into the aorta, cyanosis occurs. On physical examination the heart is small, there is a systolic murmur, the pulmonary second sound is quiet, cyanosis and clubbing are present. The red blood cell count and hemoglobin are elevated and hematocrit increased. X-rays reveal enlargement of the right ventricle and right auricle but overall a small heart. Due to stenosis of the infundibulum the main pulmonary artery segment is concave and the lung fields are clear. Electrocardiogram reveals right axis deviation and right ventricular hypertrophy. Catheterization reveals a low pulmonary artery pressure with a systemic right ventricular pressure. Due to the venous arterial shunt into the aorta arterial unsaturation is found. Occasionally the aorta can be catheterized from the right ventricle since it overrides a ventricular septal defect. Angiocardiography reveals rapid egress of the contrast solution from the right ventricle out the overriding aorta. Contrast solution reaching the pulmonary artery is reduced. The left auricle is not visualized until late in the series. Operation is of three types: (1) the Blalock-Taussig subclavian-pulmonary artery anastomosis; (2) the Potts-Smith aorto-pulmonary artery side-to-side anastomosis; (3) the Brock infundibulotomy.

Tricuspid atresia is a malformation of the heart wherein there is a failure of the tricuspid valve to develop. Venous blood returning to the right auricle must pass through an auricular septal defect or patent foramen ovale into the left auricle, thence into the left ventricle, reaching the lungs either through a ventricular defect into a small right ventricle and pulmonary artery or through a patent ductus arteriosus into the pulmonary artery. The strain is entirely upon the left ventricle since the left ventricle of necessity must handle both venous and arterial blood. Since the pulmonary blood supply is reduced and venous blood is mixed with arterial blood the symptoms and the findings are essentially the same as those of a tetralogy of Fallot. The essential difference is the presence in the electrocardiogram of left axis deviation and left ventricular hypertrophy. Operation is the same as that for a tetralogy of Fallot with the exception that the direct approach of Mr. Brock is not possible.

Transposition of the great vessels is perhaps the most severe of all congenital malformations of the heart. In this malformation the aorta arises from the right ventricle and the pulmonary artery arises from the left ventricle. Venous blood returning from the body to the right auricle passes to the right ventricle and out the aorta to

the body again. Arterial blood returning from the lungs to the left auricle passes through the left ventricle and out the pulmonary artery to the lungs again. Two individual circulations exist. In order for life to be maintained there must be a defect present which will enable or permit the passage of oxygenated blood from the left side to the right side of the heart and the venous blood from the right side to the left side of the heart. Perhaps to compensate for the poor admixture of blood both ventricles overwork. The volume of blood that flows through the lungs is tremendous. Systemic blood flow is normal or slightly above normal. Both ventricles hypertrophy and both ventricles dilate. The signs and symptoms are as one would expect; early onset of intense cyanosis and dyspnea, early onset of cardiac failure. At birth the heart is normal in size but it enlarges rapidly. The presence of marked cyanosis and a very large heart in an infant should immediately bring to mind the strong possibility of a transposition of the great vessels. X-ray and fluoroscopy reveal a large, football-shaped heart with enlargement of all chambers. The main pulmonary artery segment is not in evidence since the pulmonary artery arises posterior to the aorta. The peripheral pulmonary arteries are large and pulsations can usually be seen. The lung fields appear overly vascular. The electrocardiogram usually reveals right axis deviation and right ventricular hypertrophy though there may be evidence of combined hypertrophy. Angiocardiography reveals an anteriorly placed aorta with rapid passage of contrast solution from the right ventricle out the aorta. Catheterization does not distinguish this malformation from an extreme tetralogy of Fallot with pulmonary atresia. Operation on patients with this malformation has not been very successful. At the Johns Hopkins Hospital the most successful procedure has been the creation of an auricular septal defect. In children over the age of 2 this has been quite effective, but under the age of 2 we have had no survivals.

Isolated valvular pulmonary stenosis is characterized by a cone-like, nipple-shaped pulmonary valve with fusion of all 3 cups to form a cone and a pin point opening at the apex of the cone. There is no ventricular defect. Obviously it is difficult for blood to pass from the right ventricle out the pulmonary artery. As a result, there is marked hypertrophy and dilatation of the right ventricle. As the pressure within the right ventricle increases the right auricle is subject to strain. The right auricle dilates and hypertrophies. If the foramen ovale is anatomically open, this marked dilatation of the right auricle will cause it to become functionally open and venous blood will pass from the high pressure area in the right auricle into the low pressure area in the left auricle. In our experience cyanosis is usually present. The age of onset of cyanosis has been variable. Because of the low pulmonary artery blood flow dyspnea is a prominent symptom. On physical examination the heart is found to be enlarged with marked enlargement of the right ventricle. A harsh systolic murmur is heard over the pulmonary valve region. This murmur is well transmitted out to the lungs and up toward the left clavicle. The pulmonary second sound is clear and quiet. Because of hypertrophy of the right auricle and possibly because of tricuspid insufficiency pulsations in the neck veins are common, the liver is usually enlarged and pulsations usually can be felt along its edge. X-rays reveal an enlarged heart with the enlargement entirely of the right ventricle and right auricle. The main pulmonary artery segment is dilated representing post-stenotic dilatation. On fluoroscopy, pulsations are quite evident within the main pulmonary artery segment but the right and left pulmonary arteries are quiet and the peripheral lung fields appear overly clear. The electrocardiogram reveals marked right axis deviation, right ventricular hypertrophy and right heart strain with tall, peaked P waves in standard lead 2. The degree of hypertrophy and strain is much greater than in the tetralogy of Fallot. Occasionally a right bundle branch block pattern may be present. Catheterization reveals a very high pressure within the right ventricle. Pressures have been recorded as high as 218 mm. of mercury systolic within the right ventricle. Figures are usually well above those seen in tetralogy of Fallot. The pulmonary artery pressure is low. There is no evidence of an overriding aorta. Arterial unsaturation is present in those patients in whom the foramen ovale is open. Angiocardiography is characterized by a lingering of the contrast solution within the right side of the heart and the main pulmonary artery. Contrast solution fails to pass rapidly through the lung fields. The aorta is visualized late in the series. The left auricle may be visualized if the foramen ovale is open.

Operation in this group in our hospital has been the procedure designed by Mr. Russell Brock, Guy's Hospital, London. A direct approach is made upon the pulmonary valve; the pulmonary valve is cut and then dilated. A total of 33 patients have been operated upon since November of 1949. Of the 33 we have lost 5 patients. Four of the five patients died while still on the operating table just prior to or immediately after the pulmonary valve was cut. These 4 patients were markedly limited and had extremely large hearts. The remaining patient developed a brain abscess. Patients who survived surgery have all been greatly improved. Heart size has decreased, dyspnea has disappeared completely or lessened greatly and in all but a very few patients cyanosis has completely disappeared. We have had no late deaths in this group. Catheterization studies have been attempted postoperatively but to date we have too few results to evaluate the success of this procedure. At the present time we feel that surgery should be attempted on patients with an isolated valvular pulmonary stenosis before the heart has become excessively large and preferably at a time when the patient is just beginning to show cardiac enlargement and advancing electrocardiographic evidence of right heart strain. Our results indicate that the risk of surgery is much greater in patients with marked cardiac enlargement than in patients where heart size is relatively normal and the electrocardiogram does not reveal far advanced heart strain.

DISCUSSION (*Abstract*)

Question.—Can the diagnosis of isolated pulmonary stenosis be made before the patient arrives at the operating table in every case?

Dr. Dammann Jr.—I should say, in the large majority, yes, because of several factors. The heart is larger, the right ventricle is greatly enlarged, the main pulmonary artery as seen is markedly dilated, the electrocardiogram shows right heart strain with very peaked P waves. These are uncommon in tetralogy of Fallot. In most instances a correct diagnosis should be made prior to operation.

Question.—Have the experiences at Baltimore in the resection of the infundibulum borne out the work of Dr. Brock in England?

Dr. Dammann.—We have tried only infundibular dilatation and not resection. It is an extremely difficult procedure. If I remember correctly we have only attempted about five cases. The risk of surgery is certainly greater. Two of the patients did not survive surgery. In those who did survive the results have been at least equal to the results of the other operations.

ESOPHAGEAL HIATUS HERNIA SIMULATING CORONARY ARTERY DISEASE*

By EDMOND K. DOAK, M.D., F.A.C.P.†
Houston, Texas

Herniation of the stomach through the esophageal hiatus of the diaphragm occurs not uncommonly, and is noted with increasing frequency as the average age of patients examined progresses beyond forty years.[1,2] Such hiatus hernias may cause no symptoms whatever; they may cause sensations and disorders readily related to the digestive tract, including massive hemorrhage; and they may cause pain which is felt behind the sternum, in the precordium, in the upper back, neck, shoulders or arms, in the same distribution and with the same intensity as those pains arising from angina pectoris or myocardial infarction.[1,3] It is this last group of cases, suggestive at the bedside of heart disease, which I wish to discuss.

Since coronary artery disease and hiatus hernia both occur often in the same decades of life, it is to be expected that the similarity of their painful symptoms would sometimes lead to confusion in diagnosis. Also it is to be expected that occasionally they might co-exist in the same patient.[3] In any equivocal situation marked by severe pain in the chest, it is not likely that the heart would escape suspicion, but it has been my experience that hiatus hernia is seldom considered in the differential diagnosis of coronary artery disease. Some idea of the relative importance of hiatus hernia in this connection may be gained from the fact that during a twelve-month period six patients from my individual private practice were admitted to a hospital with a diagnosis or a strong suspicion of coronary artery disease, only to have all their symptoms ascribed ultimately to hiatus hernia.

Time does not permit reporting the details of these cases, nor the recitation of a proper bibliography.

The diagnosis of esophageal hiatus hernia as the cause for coronary-like pain may be suggested by the symptoms but cannot be established without appropriate roentgen examination. It is worth

---

*Read in Section on Gastroenterology, Southern Medical Association, Forty-Fourth, Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

†Assistant Professor of Clinical Medicine, Baylor University College of Medicine, Houston, Texas.

while for the roentgenologist to make every reasonable effort to demonstrate hiatus hernias, because some of the most severe symptoms may arise from some of the smallest hernias.[1] In order to distinguish between a normal, but dilated, phrenic ampulla and a small herniation of the stomach, it is necessary to examine the rugal pattern closely. For this purpose, films of good quality are far more conclusive than fluoroscopic examination.

In any large series of cases of hiatus hernia causing distressing symptoms, there will be a great proportion of cases in which the symptoms point so strongly to the digestive tract that the experienced physician will not need to feel much concern about heart disease as a causative factor. This seems particularly true in women and in young persons, as well as in those cases in which the hernia is of considerable size. On the other hand, persons suffering with angina pectoris or myocardial infarction frequently mention annoying digestive symptoms. Hiatus hernia may at times give rise to symptoms closely simulating those of heart disease, with no more suggestion of gastro-intestinal involvement than is commonly seen in proven heart disease.

In this group of cases the presenting symptom is pain, which may be felt across the chest, behind the sternum, radiating into the neck, the shoulders, the arms or high in the interscapular area. In some cases this pain may be of abrupt onset and of frightening severity, perhaps lasting for hours and sometimes requiring hypodermic medication for relief. Such pains may occur in individuals who have not previously suffered any significant discomfort. In other patients, pain in the same location may be of less severity and of brief duration, suggesting angina pectoris. These milder pains may be relieved by use of nitroglycerin or amyl nitrite, although every such patient does not experience relief with these medications, and in a given case the relief may not be a dependable thing. It has been reported that daily administration of atropine may prevent this type of pain from occurring.[1]

The coronary-like pain of hiatus hernia is more consistently related to a full stomach than to any other circumstance of daily life. Either exertion or the recumbent posture may initiate pain following a meal and both may fail to do so when the stomach is empty. Some patients may avoid pain by maintaining an upright posture for a few hours after each meal. The onset of pain does not always occur immediately after the patient lies down but may be delayed, so that he is wakened from a sound sleep. Resumption of an upright posture does not necessarily relieve the pain. Lifting or straining, with its attendant increase in intra-abdominal pressure, has not caused pain in my patients except immediately after a meal.

Persons seized by the more severe attacks of pain from hiatus hernia seem to have the same paralyzing fear that distinguishes angina pectoris and myocardial infarction. Perhaps this emotional crisis is responsible for the breathlessness, pallor and tachycardia which may ensue. In one of my patients these signs were of alarming severity, but there was no lowering of the blood pressure and the signs of shock did not persist beyond the duration of his pain and apprehension.

The physical findings in these cases will be those ordinarily found in the older age group. A certain proportion of the patients will be overweight and a certain proportion will evidence cardiovascular defects. The hernia itself gives rise to no physical signs.

Attacks of severe pain due to esophageal hiatus hernia are not ordinarily accompanied by fever, leukocytosis or increase in the erythrocyte sedimentation rate. Such blood pressure changes as are noted are due initially to pain and fright, with later changes possibly due to rest, sedation and change in diet. One of my patients, with his first attack of pain, required 175 mg. of demerol® for relief. His pain was aggravated by deep inspiration. He had a temperature of 100° F. for three days and his leukocyte count was 13,600 per cu. mm. for one day. Absolutely no objective evidence of cardiac or pulmonary disease could be demonstrated. One might suppose that he had suffered some disruption or internal tearing of the mediastinal structures as the result of an acute herniation or an abrupt increase in size of the hernia.

The electrocardiogram will illustrate a cross section of the age groups studied. There will be instances of cardiac hypertrophy, ventricular preponderance and other more or less specific indications of cardiac wear and tear. In those cases marked by pains suggestive of myocardial infarction, serial electrocardiograms will not show the progressive changes characteristic of focal myocardial necrosis. In cases suggestive of angina pectoris, the two-step exercise test of Master[4]

and the anoxemia test of Levy[5] will not bring on the pain or elicit the electrocardiographic changes diagnostic of significant coronary artery disease. If, in the same patient, the Master test or Levy test shows an insufficient coronary circulation and roentgen studies show an esophageal hiatus hernia, both these conditions must be taken into account in evaluating the patient's symptoms and in prescribing his treatment. When both conditions are present, either may be causing symptoms to the exclusion of the other, or both may be contributing to the patient's complaint. In one of my patients, proven angina pectoris of some ten years' duration was markedly alleviated by proper management of an esophageal hiatus hernia.

Patients whose symptoms strongly suggest heart disease should be considered as having heart disease until proven otherwise. In the acute attacks, this proof depends upon and must wait upon the exclusion of myocardial injury. Should positive evidence of myocardial infarction be equivocal or lacking, roentgen search for hiatus hernia is in order. Some physicians might feel impelled to begin anti-coagulant therapy before positive objective evidence of infarction is obtained. In this connection, one might well remember the frequency of esophageal hiatus hernia and its propensity to bleed.

All cases of angina pectoris may properly be examined for hiatus herniation and should a hernia be found, the coronary circulation evaluated by the Master test or the Levy test. Even in the presence of proven angina pectoris proper management of an existing hiatus hernia may ameliorate the distressing symptoms.

REFERENCES

1. Jones, C. M.: Hiatus Esophageal Hernia. New England J. Med., **225**:963 (Dec. 18) 1941.
2. Brick, I. B.: Incidence of Hiatus Hernia and Associated Lesions Diagnosed by Roentgen Ray. Arch. Surg., **58**:419 (April) 1949.
3. Master, A. M.; Dack, S.; Stone, J.; and Grishman, A.: Differential Diagnosis of Hiatus Hernia and Coronary Artery Disease. Arch. Surg., **58**:428 (April) 1949.
4. Master, A. M.; Friedman, R.; and Dack, S.: The Electrocardiogram After Standard Exercise as a Functional Test of the Heart. Am. Heart J., **24**:777, 1942.
5. Levy, R. L.; Williams, N. E.; Bruenn, H. G.; and Carr, H. A.: The "Anoxemia Test" in the Diagnosis of Coronary Insufficiency. Am. Heart J., **21**:634, 1941.

DISCUSSION (*Abstract*)

Dr. E. Sterling Nichol, Miami, Fla.—The author has limited his paper to those cases of hiatal hernia which simulate coronary artery disease. These two conditions have one common characteristic, that they both may occur without clinical symptoms, only to be discovered accidentally through x-ray or electrocardiographic study.

Dr. Doak's fortuitous discovery of six patients in one year who proved to have hiatal hernia instead of acute coronary insufficiency or myocardial infarction as first suspected, probably does not reflect the true frequency in which this differential diagnosis is required. Regardless of the actual incidence of clinically expressive hiatal hernia, as yet unknown, it is rare that the condition is misdiagnosed acute myocardial infarction.

More commonly confusion arises in differentiating those cases of hiatal hernia that simulate angina pectoris, and when both conditions co-exist, a nice evaluation of the relative bearing each has on the complaints of the patient will exhaust the clinical acumen of the most intuitive clinician. The issue is clouded because effort, fatigue and emotional factors accentuate not only anginal pain, but the pain of hiatal hernia.

Having been alerted long ago to the masquerading habits of hiatal hernia by a gross diagnostic error, for the past 15 years nearly all of my ambulatory patients suspected or proven to have coronary heart disease have been specifically studied for the presence of hiatal hernia by meticulous radiologists, yet herniae were found in only 6 per cent. On the other hand, some internists believe that 20 per cent of all patients presenting the anginal syndrome have hiatal herniae. Indirect evidence, suggesting that we have not overlooked many cases in which coronary heart disease and hiatal hernia co-exist, arises from the fact that in approximately 230 private patients with coronary heart disease treated with dicumarol since 1943, one half for the long term (months or years, not weeks) not a single instance of bleeding from an hiatal hernia developed, whereas five cases developed melena from other gastro-intestinal lesions.

It is well to bear in mind that relief of distress in the epigastrium, chest, back or arms, following eructation of gas, occurs in many patients with the anginal syndrome, and belching often accompanies the relief afforded by nitroglycerine. Furthermore, many anginal sufferers without associated hiatal hernia do not tolerate well the recumbent position after eating. In a patient with proven hiatal hernia, where some suspicion of associated coronary artery insufficiency lingers in the mind of the clinician because of the location and character of the distress, in the event the resting electrocardiogram is normal, tracings after a single or even double exercise tolerance test as advocated by Master should be studied before ruling out coronary artery insufficiency. Should this test be negative, and should the patient not develop pain on walking (regardless of pain with other exertion) then one may safely relax about the possibility of associated anginal syndrome. It is probably true, where the two conditions co-exist, that sometimes symptoms arise due to coronary insufficiency and sometimes the distress is due to the hernia, and on other occasions the hernia may initiate a true anginal attack. When relief of pain is obtained by a patient with hiatal hernia from nitroglycerine, there is usually associated coronary artery disease, as nitroglycerine relieves the pain of hiatal herniae *per se* infrequently.

THE DIFFERENTIAL DIAGNOSIS OF COMA*

By ROSCOE L. PULLEN, M.D.
New Orleans, Louisiana

The title of this paper should be termed the differential diagnosis of the comatose patient, for coma is not a medical diagnosis. Coma may be defined as a state of unconsciousness from which the patient cannot be aroused, and, as such, it is a symptom of disordered or altered cerebral activity which may occur from a large variety of unrelated causes and is a terminal manifestation of many illnesses. The differential diagnosis of the comatose patient could involve discussion of most of the clinical entities known to modern medicine and, as a didactic presentation, would offer little of teaching value in the clinical approach to the comatose patient.

The physiology of coma, like that of sleep, is unknown. Electro-encephalographic studies of the human cortex have revealed that patients in coma exhibit abnormalities similar to, but of greater severity than those obtained during normal sleep.[1] No characteristic electro-encephalographic differences are observed in coma resulting from various etiologic factors, thus supporting the thesis that coma is a state of altered cerebral function accompanying many pathologic and physiologic conditions.

The importance of coma as a presenting finding is growing and this for several reasons. In large general hospitals, about five per cent of the emergency admissions are patients in coma; in private hospitals, about three per cent.[2] The growing incidence of coma is ascribable to the following factors: (1) lessening of social inhibitions toward over indulgence in alcohol; (2) the increasing use of automobiles and the resulting congestion of the highways which is reflected in a greater number of and severer automobile accidents; (3) the growing use[3] of phenobarbital and the various derivatives of barbituric acid; (4) suicides; (5) progressive aging of our population, which is accompanied by an increasing incidence of the effects of degenerative diseases, such as cerebrovascular accidents, congestive heart failure, renal insufficiency, diabetic coma, and the like; (6) traumatic conditions, such as are seen in industry, under military conditions, or in the home; (7) the injudicious use of certain sedative drugs; and (8) induced coma, for example, surgical operations. Thus, every physician can expect to encounter the comatose patient in his practice and it is unfortunate that the clinical approach to the comatose patient has not received greater attention in the undergraduate medical curriculum or even in the internship or residency.

The diagnostic survey of the comatose patient may be considered under six headings: (1) statistical knowledge of the incidence of the various causes of coma; (2) the medical history; (3) the physical examination; (4) the lumbar puncture and study of the cerebrospinal fluid; (5) other laboratory studies; and (6) roentgenologic investigation.

(1) CAUSES

Among emergency admissions, the most common causes[4] of coma as a presenting finding and their relative frequency are: alcoholism, 60 per cent; trauma, 10 to 13 per cent, of which fractured skulls account for about two-thirds and head injuries about one-fifth; cerebral vascular accidents, ten per cent; poisonings, both exogenous and endogenous, five to ten per cent; and the following, each comprising less than three per cent, in the order of numerical importance: epilepsy, diabetes, meningitis, pneumonia, cardiac decompensation, exsanguination, syphilis of the nervous system, uremia, eclampsia, heat exhaustion or retention, and a large listing of miscellaneous causes including erysipelas, burns, encephalitis, brain tumor, miliary tuberculosis, disseminated carcinoma, hypoglycemic shock, Stokes-Adams syncope, immersion, syncope of unexplained etiology, pernicious anemia, hysteria, ruptured ectopic pregnancy, leukemia, cholemia, strangulated hernia, septicemia and empyema. Effective therapy exists for many of the conditions listed above. Hence the immediate diagnosis of the comatose patient becomes imperative if the estimated mortality of the comatose patient, excluding the common drunk, of greater than 20 per cent is to be lowered.[2] This unfavorable situation is further accentuated by the fact that the diagnostic errors in the comatose patients of the non-alcoholic group is also estimated to approach 20 per cent.[2]

(2) THE MEDICAL HISTORY

Of all the diagnostic measures applicable to the comatose patient, the history of the conditions

*Read in Section on Anesthesiology, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, Nov. 13-16, 1950.

†From the Division of Graduate Medicine, Tulane University of Louisiana School of Medicine and the Charity Hospital of Louisiana at New Orleans.

preceding the onset of coma or of the circumstances in which the comatose patient was discovered is of the greatest importance in the differential diagnosis of coma. In a survey of 1,167 cases admitted in coma to the Boston City Hospital, Solomon and Aring[5] estimated that the history was of diagnostic importance in 80 per cent or more of their cases. The following points[4 6 7] should be obtained from the history: type of onset, injury, ingestion of poisons, preceding illness or infections, convulsions, giddiness, vertigo, weakness, visual disturbances, unsteadiness, restlessness, drowsiness, confused speech, yawning, nausea and vomiting, headaches, loss of memory, inability to concentrate, paresthesias, aphasia, paralysis of any part, and history of hypertension, diabetes, renal disease, cardiac disease, epilepsy, pregnancy or other systemic illnesses.

(3) PHYSICAL EXAMINATION

In emergency cases, the physical examination is the most important basis of diagnosis in the absence of a history. Insofar as possible, the physical examination should be thorough and complete, searching especially for organic disease, such as pneumonia, meningitis, cardiac disease, ruptured viscus, craniocerebral injury, and the like. The following points should be observed (Mount[8]):

General Appearance.—Convulsive movements and abnormal attitudes or positions of the limbs suggest epilepsy or brain tumor, although they are occasionally seen in insulin shock, hypertensive encephalopathy, acute renal insufficiency, eclampsia and acute overwhelming infections. Abnormal positions of the limbs may accompany fractures or other traumatic conditions. The scalp and cranial orifices should be inspected for contusions, lacerations, depressed or compound fractures. The oozing of blood or cerebrospinal fluid from the nose or ears points to a craniocerebral injury.

The condition and color of the skin, mucous membranes and nail beds should be noted carefully. The cherry-red or rosy color of the skin in carbon monoxide poisoning is diagnostic. Cyanosis is characteristic of severe head injuries, pneumonia, pulmonary edema, marked diabetic acidosis and epileptic seizures. The face may be flushed in patients with early diabetic acidosis, in the alcoholic, and, occasionally, in instances of intracerebral hemorrhage. Pallor is associated with essential hemorrhage (either external or internal), cardiac syncope and sometimes with Stokes-Adams syndrome. A cold, clammy skin may result from hyperinsulism, morphine poisoning, or shock secondary to perforated viscus, massive hemorrhage, myocardial infarction, acute meningococcemia (Waterhouse-Friderichsen syndrome), or pulmonary infarction. The degree of hydration of the skin and mucous membranes should be noted for dehydration is a common finding in alcoholism, uremia, diabetic acidosis and other conditions favoring an abnormal loss of water and salt from the body fluids (Pullen and Rushmer[9]). The skin, nail beds, conjunctivas and mucous membranes should be inspected for petechiae, the presence of which would suggest a cerebral embolism as the cause of the coma. Bilateral dependent edema intimates cardiac, renal or hepatic insufficiency leading to coma, as well as cerebral embolism; unilateral edema would favor cerebral embolism arising from thrombophlebitis or phlebothrombosis. Brownish pigmentation of the skin and mucous membranes is seen in acute adrenal insufficiency (Addisonian crisis).

Pulse.—A slow bounding pulse suggests increased intracranial pressure resulting from tumor, hemorrhage, trauma or advanced meningitis. Slowness of the pulse is also characteristic of freezing, morphine poisoning, and Stokes-Adams syndrome. A full, bounding pulse is found in acute infections, thyrotoxic storm, and congestive heart failure. A weak, thready pulse is a part of the clinical picture of shock. An irregular pulse suggests cardiac arrhythmias such as auricular fibrillation; these, as well as the findings of valvular heart disease or bacterial endocarditis, point to cerebral embolism as the probable cause of coma.

Respiration.—Rapid respirations occur in patients with fever or acute infections, as well as pulmonary edema and chronic pulmonary disease. The so-called "air hunger" or Kussmaul breathing is indicative of acidosis, such as diabetic acidosis. Slowing of the respiration may be produced by increased intracranial pressure, morphine poisoning, or freezing. Stertorous breathing is seen in patients hard hit by cerebral hemorrhage. Irregular respiration (Biot's breathing) is seen occasionally in meningitis. Waxing and waning respiration with periods of apnea (Cheyne-Stokes breathing) is seen in many conditions, such as arteriosclerotic and hypertensive heart disease, chronic nephritis, and increased intracranial pressure, leading to coma.

Temperature.—Most comatose patients have an elevated temperature. It may be depressed in patients with coma due to shock, morphine poisoning and freezing.

Blood Pressure.—An elevated blood pressure may suggest cerebral hemorrhage, hypertensive encephalopathy, uremia or congestive heart failure as the cause of coma. It should be recalled that the blood pressure frequently falls before or during the onset of such catastrophes as acute myocardial infarction and cerebral hemorrhage.

Odor.—The finding of an alcoholic odor to the breath should not deter the examiner from looking for an associated head injury. The odor of acetone on the breath suggests diabetic acidosis; an ammoniacal breath odor, uremia. In poisoning, the characteristic odor of agents such as cyanide, lysol, phenol or illuminating gas may be detected.

Eyes.—The condition of the eyes merits particular attention. Conjugate deviation of the eyes is often seen in pontine and frontal lesions. The pupils are unequal in size in unilateral cerebral lesions but are dilated in alcoholism, cerebral hemorrhage, barbiturate and belladonna poisoning. The pupils are constricted in morphine poisoning and pontine hemorrhage. The demonstration of papilledema of the fundus points to increased intracranial pressure from an expanding lesion or hypertensive encephalopathy. The fundus should be examined carefully for flame-shaped hemorrhages, whitish or "cotton wool" exudate, arteriovenous disproportion and punctate hemorrhages indicative of hypertensive, arteriosclerotic, diabetic or "albuminuric" retinopathy.

Softness of the eyeballs to palpation is found in diabetic acidosis. Inequality of the palpebral fissures accompanies paresis of one side; when raised, the eyelid on the paretic side slowly covers the eyeball, whereas on the normal side the eyelid rapidly returns to position. The corneal reflexes disappear in deep coma. Resistance to raising the lids or rolling of the eyes occurs in patients with hysteria. Association of ptosis, pupillary abnormalities, deviation of the eyes, or bruit should be noted and recorded as such combinations may point to specific neurologic syndromes.

Ears.—The discharge of blood or cerebrospinal fluid from the ear or the collection of free blood behind the ear drum suggests a basilar skull fracture; a draining ear, an intracranial abscess.

Face and Mouth.—The face should be observed carefully for evidences of facial paralysis. Bleeding, lacerations or evidences of old scarring of the tongue are strongly suggestive of epilepsy. A blue line along the gum margins is seen in lead poisoning.

Neck.—Stiffness of the neck is evidence of meningeal irritation from meningitis or subarachnoid hemorrhage. The elicitation of Kernig's and Brudzinski's signs may be confirmatory.

Trunk.—Both the heart and lungs should be checked carefully for organic disease. In the heart, cardiac arrythmias and enlargement should be detected, as well as chronic valvular heart disease and subacute bacterial endocarditis; the significance of such findings has been stressed. The abdomen is rigid in instances of perforated viscus and peritonitis, as well as ruptured ectopic pregnancy. Enlargement of the uterus and other findings of pregnancy will confirm a ruptured ectopic pregnancy. Urinary or fecal incontinence during coma takes place with epilepsy. Inspection of the external genitalia for scarring or other evidences of a chancre may point to a syphilitic basis for cerebral thrombosis.

Extremities.—Stiffness, inequalities in tonus, and both superficial and deep tendon reflexes of all extremities should be tested. Even in coma, it is possible to detect differences in the tonus of the paralyzed and non-paralyzed sides. It should be mentioned that hyperinsulism may induce bilateral hyperactive reflexes and positive Babinski's reflexes.

(4) THE LUMBAR PUNCTURE AND STUDIES OF THE CEREBROSPINAL FLUID

Next to the medical history and a thorough physical examination, the lumbar puncture and studies of the cerebrospinal fluid are the next most important diagnostic technics in the approach to the comatose patient. In a study of 1,167 patients admitted to the Boston City Hospital in coma, Solomon and Aring[5] estimated that the lumbar puncture afforded important diagnostic data in 15 per cent of the patients. The chief contraindication to the performance of the lumbar puncture is shock, though the technic may be complicated by the presence of fractures of the pelvis, obesity, bony distortion of the vertebral column, the presence of suspected or known increase of the cerebrospinal fluid pressure, craniocerebral injury, and associated illnesses of severe degree. It seems trite to emphasize that the lumbar puncture should be performed under

circumstances which will permit studies of the pressure, dynamics, cellular composition, chemistry and bacteriology of the cerebrospinal fluid which is removed during the tap.

(5) OTHER LABORATORY STUDIES

In the series of 1,167 patients admitted to the Boston City Hospital in coma, Solomon and Aring[5] found that the various types of laboratory data were of diagnostic value in nine per cent of the cases, but more significantly they found that no case was mishandled or incorrectly diagnosed for lack of adequate laboratory data. The necessity for various types of laboratory examinations to be pursued on the comatose patient, as with other types of seriously ill patients, is so well entrenched in medical thinking that it seems unnecessary to review these procedures. Suffice it to say that the laboratory investigation should include: (1) gastric lavage for all poisonings and severe alcoholics; (2) catheterization and complete urinalysis; (3) routine blood studies (red and white counts, hemoglobin, smear); (4) studies of the blood in non-traumatic patients for serologic data and non-protein nitrogen determinations; and (5) when indicated, additional studies such as spectroscopy, determination of the icteric index, van den Bergh, blood sugar, blood culture, carbon dioxide combining power, and electrocardiograms. Gerber[10] has prepared an excellent account of the various laboratory aids which may be utilized in the differential diagnosis of the comatose patient and his paper should be consulted for a listing of the less commonly used types of laboratory procedures.

(6) ROENTGENOLOGIC STUDIES

Unless the patient is in shock, roentgenograms of the skull should be taken routinely upon admission of every comatose patient. These films of the skull should be examined carefully for evidences of skull fracture, atrophy or enlargement of the sella turcica, displacement of the pineal gland, erosion, thickening or increased vascularity of the skull tables, and presence of calcifications indicative of certain tumors. Roentgenograms of other parts of the body, such as the chest, may be helpful in establishing systemic illnesses of various types, such as pneumonias, metastases, cardiac disease and the like.

DISCUSSION

It will be noted that we have not emphasized the depth of the coma, the condition of the pupils, or the state of the reflexes. These points have not been found to be of practical value in differential diagnosis of the causes of coma.[4] The depth of the coma may vary markedly irrespective of the cause. The state of the pupils is usually abnormal in the majority of cases of coma and, with the possible exception of morphine poisoning, cannot be correlated with the causes of coma. Similarly, Gowers[11] pointed out many years ago that the reflexes varied with the depth of the coma regardless of the cause. In these respects, coma is analogous to a state of induced anesthesia, and the reflex changes are comparable to those obtained in the various planes of anesthesia. If the coma is light, the normal reflexes are preserved and may be hyperactive, automatic swallowing remains intact, the pupils may react to light, and painful stimuli may provoke muscular movements. If the coma is deep, the reflexes become diminished or absent, swallowing is impossible, the pupils may dilate and fail to react to light, the skeletal musculature becomes flaccid and fails to respond to painful stimuli, relaxation of the palatal musculature takes place and the stertorous breathing characteristic of deep coma makes its appearance. With the spread of the depression from the higher centers to the lower centers of the central nervous system accompanying deepening of coma, the respiratory center may likewise be affected, so that the respirations may be decreased, shallow or irregular. With the suppression of the cough reflex and the lessening of the respiratory excursion, secretions may accumulate in the bronchi and trachea giving rise to the familiar "rattle" which frequently heralds the onset of death.

CONCLUSIONS

The discussion above has outlined the salient features in the diagnostic approach to the comatose patient. One axiom should be followed zealously: establish a coma routine, that is, pursue the diagnostic outline as presented above as a routine on every patient seen in coma. Adherence to this principle should reward the examiner with an early diagnosis and immediate institution of effective therapy.

REFERENCES

1. Solomon, P.; Jasper, H. H.; and Bradley, C.: Studies in Behavior Problem Children. J. Nerv. and Ment. Dis., **86**:459, 1937.
2. Rovenstine, E. A.: The Incidence, Diagnosis and Management of Coma. Anesthesiology **6**:1, 1945.
3. Isbell, H.: Addiction to Barbiturates and the Barbiturate Abstinence Syndrome. Ann. Int. Med., **33**:108, 1950.
4. Solomon, P.: The Causes, Diagnosis and Proper Handling of Coma. Med. Clin. North America, **22**:617, 1938.
5. Solomon, P.; and Aring, C. D.: A Routine Diagnostic Procedure for the Patient Who Enters the Hospital in Coma. Amer. J. Med. Sci., **191**:357, 1936.

6. Coffey, W. L.: Differential Diagnosis of Coma. Marquette Med. Rev., **7**:144, 1942.
7. Hermann, G.: Some Medical Emergencies. J. Missouri M. A., **8**:243, 1942.
8. Mount, L. A.: The Differential Diagnosis of Coma. Med. Clin. North America, **32**:795, 1948.
9. Pullen, R. L.; and Rushmer, R. F.: Water Balance, in Sodeman, W. A.: Pathologic Physiology: Mechanisms of Disease. Philadelphia: W. B. Saunders Co., 1950.
10. Gerber, L.: Laboratory Aids in the Differential Diagnosis of Coma. Ill. Med. J., **78**:263, 1940.
11. Gowers, W. R.: A Manual of Diseases of the Nervous System. London: J. and A. Churchill, **2**:99, 1893. Cited by Solomon.[4]

CHRONIC RHEUMATOID ARTHRITIS*

By EUCLID M. SMITH, M.D.†
Hot Springs National Park, Arkansas

Chronic rheumatoid arthritis is a systemic disease of obscure etiology, characterized by an irregular clinical course and manifested by progressive inflammatory changes in the peripheral joints and in the associated structures, with a consequent impairment of joint function; and, if uninterrupted, it leads to crippling and painful deformities that all too often result in total and permanent disability.

The primary reaction occurs in the synovial membrane lining the joint, and is proliferative in character.[1,2] First, there is an edema of the tissue, followed by a scanty round cell infiltration and fibrosis. Progression is marked by the formation of villi which project into the joint cavity. The process may be contained in the synovial tissues or a villus may become attached to the outer surface of the cartilage, forming a pannus which grows along the articulating surface. As the pannus grows, the cartilage beneath undergoes necrosis and is replaced by fibrous tissue which, in turn, becomes impregnated with calcium salts and produces a permanent fixation of the joint. The inflammatory process may involve the periarticular tissues and associated structures.

Secondarily, other processes develop which add greatly to the impairment of joint function as well as to the systemic effects of the disease. The latter are frequently out of all proportion to the severity of the primary inflammatory reaction in the synovia. Muscle atrophy, tendon shortening, and thickening of the posterior capsule of the joint are all interrelated processes, and occur early as the result of a disturbance in the normal physiology of tissues related to joint function. First, there is spasm of the muscles which produce flexion of the extremity. The flexor, or stronger muscle groups, are shortened, while the extensor, or weaker muscle groups, are stretched. This spasm of the muscles is a reflex protective mechanism activated by pain from the primary process designed to immobilize the joint. This is a continuous reaction and is the normal response of the muscles to a constant stimulus. It can be interrupted only by relieving the pain. Atrophy occurs first in the stretched extensor muscle groups, later in the flexors; tendon shortening and thickening of the posterior joint capsule follow in natural sequence, thus producing the characteristic flexion deformities of chronic rheumatoid arthritis.

The onset and clinical course of the disease does not conform to any particular pattern. It may develop suddenly out of a clear sky with pain and swelling in one or more joints, with or without a febrile reaction. It may come on slowly with very little swelling, vague pains, soreness and stiffness of the muscles which gradually increase in severity. It may develop as a series of acute episodes with very little residual between attacks. This disease may develop in conjunction with any acute or chronic infectious process, or in the presence of any organic disease. Frequently, joint changes are the first manifestations of a serious clinical disorder. The clinical course is characterized by variable periods of exacerbations and remissions. It is marked objectively by joint swelling, muscle spasm, muscle atrophy, proliferation of the synovia, capsule thickening, ankylosis, loss of weight and general debility. Subjectively it is characterized by joint pain, pain on motion, pain on weight-bearing, muscle weakness, loss of appetite, constipation, soreness and stiffness, nervousness and sleeplessness.

The severity of these signs and symptoms and the rapidity with which they develop vary considerably in each individual case, and, to a very great extent, are influenced by environment. The response of the arthritic patient to weather changes is definite. Pain and discomfort are closely associated with barometric variations. Likewise, environmental factors which produce fatigue, trauma, or emotional disturbances, have a similar influence. These factors must be carefully evaluated in each individual case. Each case is a law unto itself. It charts its own course to such an extent that it is scarcely possible to make comparisons from patient to patient, or

*Read in Section on Medicine, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

†Associate Professor of Medicine, Chief of Rheumatology Section, Department of Medicine, University of Arkansas School of Medicine, Little Rock, Arkansas.

indeed, between groups of patients. Consequently, all evaluations of therapy are extremely difficult and are of limited scientific validity.

The therapeutic approach to this complex syndrome is extremely difficult and should be undertaken only after a thorough study of each individual patient. A careful history and thorough physical examination are essential. Exhaustive x-ray and laboratory studies are necessary. Frequently negative findings are of the utmost importance. Clinical judgment is much more reliable when supported by adequate laboratory and x-ray study. Furthermore, the findings and objectives of therapy should be thoroughly explained to the patient. The casual use of terms without proper explanations and amplification should be avoided. A spirit of optimism and confidence should be created. The will to get well should be encouraged.

After sufficient data have been assembled and evaluated, a plan of therapy should be developed which will meet the individual requirements of the patient and maintain the individual in the best possible state of physical and mental fitness until complete rehabilitation has been attained. Adequate nutrition is essential. Physical and mental rest, rest balanced with exercise, are needed. The relief of pain and the prevention and correction of deformities are all important objectives of therapy. To attain these objectives there is available a goodly number of reliable therapeutic agents comparatively simple in their application, and in the hands of an experienced therapist they are of proven value. Drugs for relief of pain, improved nutrition, functional management, psychosomatic methods, orthopedic treatment, climate and spa therapy, and physical medicine, are all reliable therapeutic measures, and when properly applied are most effective in relieving symptoms and in controlling the clinical course of the disease.

Even the most enthusiastic interpretation of all recorded observations in this field must lead to the conclusion that there is no specific therapy for rheumatoid arthritis. A variety of vaccines, gold, vitamin concentrates, and colloidal sulfur, have all had their day. But the only effective therapeutic approach has been and remains a system of management incorporating general measures designed for the individual needs of each case.

The antirheumatic activity of ACTH and cortisone is of immense theoretical interest, but there remains a wide gap between its present status as a research tool and its practical application to the therapy of chronic rheumatoid arthritis. In a recent review of this subject Hench[3] has emphasized the following points: first, that cortisone appears to have little or no effect on the fundamental cause or etiologic factor in rheumatoid arthritis; second, that cortisone exerts no important action toward repair of the tissue damage or advanced pathology of the disease; third, that cortisone seems to act as a buffer or shield between the tissues and the causative factor and thereby brings about a temporary remission in the course of the disease. However, after withdrawal of the hormone therapy, the disease is likely to progress along a course very like that which would have been taken had no treatment been used at all. All authorities in this field agree that hormone therapy should be regarded as still remaining in the phase of clinical investigation. A great deal of credit is due to Dr. Hench[4] who, because of his early observations of spontaneous remissions in rheumatoid arthritis, has continued to insist upon the essential reversibility of the disease process. This attitude furnished the hope and encouragement for therapeutic investigations during recent years; and his fundamental concept has been fully justified by the objective evidence of antirheumatic activity of cortisone and ACTH.[5 6]

The use of other steroid hormones in rheumatoid arthritis can be dismissed with little more than mention. Pregnenolone, desoxycorticosterone, alone or in combination with vitamin C, and a number of similar agents have been uniformly ineffective in the hands of competent observers.[7 8]

The past decade has been outstanding in medical progress. Wartime necessity and the atomic age have forced the rapid application of basic discoveries to clinical medicine and have developed a close coordination between the basic sciences and clinical research. This rapid progress is reflected in the incidence and prevalence of chronic rheumatoid arthritis. The impact of antibiotics and chemotherapy upon infectious diseases, and the advances made in nutrition as well as in other fields, are producing an entirely new pattern in the age incidence of the disease. The incidence of chronic rheumatoid arthritis in the younger age groups and its association with infectious processes is decreasing, while the incidence in older age groups and with the degenerative processes is increasing.

In recent years, research in pathology has developed the concept that chronic rheumatoid arthritis is one of a group of diseases in which there is progressive degeneration of the collagen component of connective tissue.[9] Studies in this field have indicated that there may be an essential relationship between such diseases as lupus erythematosus, periarteritis, rheumatic fever, and chronic rheumatoid arthritis. The identification of L.E. cells by Hargraves and his associates[10] has made it possible to distinguish cases of lupus erythematosus which closely simulate rheumatoid arthritis in natural history and clinical manifestations. Continued research in this field will, no doubt, lead to other important advances in differential diagnosis within the collagen group of diseases.

BIBLIOGRAPHY

1. Comroe, I. Bernard: Arthritis and Allied Conditions, pp. 123-139. Philadelphia: Lea and Febiger, 1949.
2. Luck, J. Vernon: Bone and Joint Diseases, pp. 201-242. Springfield: Charles C. Thomas, 1950.
3. Hench, Philip S.: Cortisone and ACTH in Clinical Medicine. Proc. Staff Meet., Mayo Clinic, **25**:474-476 (Aug. 16) 1950.
4. Hench, Philip S.: The Potential Reversibility of Rheumatoid Arthritis. Proc. Staff Meet., Mayo Clinic, **24**:167-178 (Mar. 30) 1949.
5. Hench, Philip S.; Kendall, Edward C.; Slocumb, Charles H.; and Polley, Howard F.: The Effect of a Hormone of the Adrenal Cortex (17-hydroxy-11-dehydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis; Preliminary Report. Proc. Staff Meet., Mayo Clinic, **24**:181-197 (April 13) 1949.
6. Hench, Philip S.; Slocumb, Charles H.; Barnes, Arlie R.; Smith, Harry L.; Polley, Howard F.; and Kendall, Edward C.: The Effects of the Adrenal Cortical Hormone 17-hydroxy-11-dehydrocorticosterone (Compound E) on the Acute Phase of Rheumatic Fever. Proc. Staff Meet., Mayo Clinic, **24**:277-297 (May 25) 1949.
7. Wells, Benjamin B.; Lowrey, Robert D.; and Seibert, Virgil E.: Desoxycorticosterone Acetate and Ascorbic Acid in the Treatment of Rheumatoid Arthritis. J. Arkansas Med. Soc., **42**:3 (June) 1950.
8. Copeman, W. S. C.; Savage, O.; Bishop, P. M. F.; Dodds, E. C.; Gottlieb, B.; Glyn, J. H. H.; Henly, A. A.; and Kellie, A. E.: Cortisone and Other Steroids in Rheumatoid Arthritis. Brit. Med. J., pp. 849-855 (Oct. 14) 1950.
9. Klemperer, P.; Pollack, A. D.; and Baehr, G.: Diffuse Collagen Disease. J.A.M.A., **119**:331 (May 23) 1942.
10. Hargraves, M. H.; Richmond, Helen; Morton, Robert: Presentation of Two Bone Marrow Elements: The "Tart" Cell and the "L. E." Cell. Proc. Staff Meet., Mayo Clinic., **23**: 25-28 (Jan. 21) 1948.

DISCUSSION (*Abstract*)

Dr. Benjamin B. Wells, Little Rock, Ark.—Dr. Smith has pointed out that there is no single specific treatment for rheumatoid arthritis. It is not an uncommon experience to see patients who have developed serious deformities of a preventable nature during prolonged treatment with a supposed specific agent. Both the patient and the physician are often at fault in seeking an easy solution to the arthritis problem without entering into the tedious and time-consuming procedures of muscle retraining, remedial exercise and general supportive measures. At the present time we feel that ACTH and cortisone can be made to fit into this general approach to therapy. By taking advantage of the dramatic subjective improvement during administration of these substances it is possible to secure the maximum benefits of physical therapy and non-surgical orthopedic measures along with the usual corrective and supportive treatments designed to improve the patient's general condition and increase his resistance to the disease process.

In the matter of diagnosis and evaluation of treatment, I feel that we should all note the criteria recommended by the American Rheumatism Association. Certainly, if our clinical investigations in this field are to be put on a sound basis, some such objective device must be generally recognized.

Dr. Paul O. Hagemann, St. Louis, Mo.—There are several roles that cortisone and ACTH can play in the current management of this disease. In the first place, orthopedic procedures such as correction of flexion contractures of the knee can be carried on with somewhat greater ease with the concurrent administration of cortisone. This materially shortens the period of hospitalization and the period of disability. In the second place, administration of cortisone or ACTH can help in tiding people over critical periods in the course of this disease. A patient on the verge of being incapacitated and perhaps bed-ridden can be given a fresh ray of encouragement to help him along in his physiotherapeutic efforts.

THE HEART IN HEMOCHROMATOSIS*

By HAROLD W. KESCHNER, M.D.†
Coral Gables, Florida

Since the discovery of insulin, the life span of patients with hemochromatosis has increased. Cardiac failure and "liver deaths" are now recognized as the major causes of death in this disorder of iron metabolism. During the past few years, a new hazard of therapeutic origin has arisen in which cases treated by repeated blood transfusions have developed overt features of hemochromatosis.

It is the purpose of this paper to report the clinical, pathological and chemical changes in the hearts of 11 cases of hemochromatosis and discuss the effect of iron overload disease upon the heart. Two cases of "exogenous hemo-

---

*Read in Section on Pathology, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

*Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are a result of his own study, and do not necessarily reflect the opinion or policy of the Veterans Administration.

*Grateful acknowledgment is made to the Department of Pathology, Mayo Clinic, Rochester, Minnesota; and the Veterans Administration Hospital, New Orleans, Louisiana, for the use of material from their laboratories, and to Dr. Alfred Blumberg, Chief, Laboratory Service, Veterans Administration Hospital, Coral Gables, for his advice.

†Pathologist, Veterans Administration Hospital, Coral Gables, Florida.

chromatosis" or siderosis are included in the study.

METHODS

Inorganic iron determinations were performed by the method of Farrar,[1] on the myocardium of the right ventricle and left ventricle of all 11 cases, and the interventricular septum of 2. Control chemical studies were made on the hearts from 5 normal individuals who died suddenly from violence or accidental causes. Carefully differentiated hematoxylin-eosin, and Gomori's method for demonstration of iron were used. Random sections which took in the right and left ventricular limbs of the bundle were also stained with a combination of Weigert's elastica and Van Gieson's connective tissue stain to render the identification of the specific tissue simpler.

RESULTS

(A) *The Iron Content.*—The available information in the literature concerning iron content of the heart in hemochromatosis is presented in *Table 1.* The average figure of five cases of normals in our series revealed a slight variation in iron content with the highest in the left ventricle, and the right ventricle consistently lower.

In *Table 2* the iron content of the myocardium of four patients who had congestive heart failure or severe heart disease is given. Three of the patients showed an increase of 10 to 18 times the normal. In one of these, the content of the right ventricle exceeded the left by 100 mg., with the septum revealing the least amount of iron. A patient with terminal failure had an iron content which did not exceed the normal.

Four cases without cardiac failure or significant clinical cardiac symptoms are shown in *Table 3.* The iron content varied from 8 to 19 times the normal. Of interest is the case of transfusional siderosis which reveals the highest amount of iron in the series. No consistent quantitative variation between the right and left ventricles was noted.

In *Table 4,* three patients without cardiac symptoms, but an increase of iron not exceeding twice the normal are shown. Again there is no significant variation in iron between the right and left ventricular myocardium.

(B) *Histologic Findings.*—Degenerative changes such as disproportion of sarcoplasm to myofibrils, fragmentation and separation, pigmentation of fibers, fiber hypertrophy, nuclear displacement, pyknosis and karyorrhexis, cloudy swelling, vacuolar and hydropic degeneration were constant microscopic findings associated with the myocardium having a high iron content. Localized or widespread areas of fiber atrophy or rupture with replacement fibrosis were conspicuously absent.

Fibrosis in varying degrees of severity was present in 9 of the 11 patients. The degree of fibrosis and extent of iron pigmentation bore no significant correlation. Four patients with only a small increase of iron showed coronary artery sclerosis; a patient with an iron content 10 times the normal had far advanced coronary artery sclerosis and an acute interstitial myocarditis. The case of transfusional siderosis had extensive iron pigmentation and mild fibrosis, but extensive leukemic infiltrates in the myocardium. Two patients with considerable iron deposition showed no fibrosis.

The quantitative differences in iron pigment of individual hearts was well demonstrated by the iron stains. Iron reacting pigment appeared as fine blue dust-like particles and coarse blue granules. In the hematoxylin and eosin preparations these appeared as golden brown and large, irregular, granular brownish pigment.

Hemosiderin appeared to be laid down in a bipolar spindle shaped formation around the nucleus, spreading longitudinally through the muscle fiber. No particular part of the heart appeared especially liable to pigmentation. There was no variation in the depth of pigmentation from sections examined under the pericardium or endocardium or in parts bordering on blood vessels. Hemosiderin in the connective tissue was scant. In the mononuclear cells it could be demonstrated intracellularly. The dense collagenous tissue surrounding the bundle in the septum showed no significant hemosiderin pigment.

DISCUSSION

Hemochromatosis is a disease characterized by an extensive deposition throughout the body of ferric hydroxide polymers in the form of brown iron staining granules, called hemosiderin. The pathologic changes in the heart have received scant attention in comparison with the lesions in the liver, pancreas, skin and other organs.

The cardiac changes in hemochromatosis are mentioned by French authors[4] as the "hepatic, cardiac, endocrine syndrome." In recent years, there have been reports of heart failure in cases

of hemochromatosis, not explained by the usual forms of heart disease.[5 6 7]

In the case of Kerr and Althausen,[8] and in the case reported by Petit,[9] complete heart block was present as well as the evidence of heart failure. Griffin, Nelson and Seal[10] report a case of hemochromatosis with heart failure in which fibrillation was present. The nature of the cardiac disturbance and the pathogenesis of the heart failure are obscure in the cases reported. Chemical analyses were not performed on the hearts and

		Iron in mg. per 100 grams dry tissue
Hemochromatosis (Sheldon)[2]	Case 1	1,070
	Case 2	283
	Case 3	550
	Case 4	212
Normal (Sheldon)		39
Hemochromatosis (Cantarow)[3]		78
Normal (H. W. K.) (5 cases). Average.		
Left ventricle		38.3
Right ventricle		33.5
Septum		35.8

Table 1

HEMOCHROMATOSIS WITH HEART FAILURE

A	Age	Cardiac Symptoms	Cause of Death	Heart Wt. G	Iron Content mg./100 Gm. Dry	Histology
451	56 Male	Precordial pain, 5 yrs. Exertional dyspnea, 5 yrs. First degree heart block BP 130/75	Hepatic insufficiency Massive hematemesis	375	L.V. 550 R.V. 667 S. 457	Fibrosis + Degeneration ++
50	54 Male	Terminal failure E. cg. myocardial damage BP 114/76	Diabetic ketosis Heart failure	420	L.V. 368 R.V. 358 S. 365	Fibrosis 0 Degeneration +
320	61 Female ingested 16 lbs. ionic Fe in 21 yrs.	Hypertension Cardiac failure, 1 yr.	3,500 cc. G.I. hemorrhage	410	L.V. 354 R.V. 366	Fibrosis + Degeneration ++++
681	74 Male	Cardiac failure Gangrene leg, 1 month	Heart failure	383	L.V. 42.3 R.V. 36.8	Fibrosis ++++

Table 2

HEMOCHROMATOSIS WITHOUT HEART FAILURE

A	Age	Symptoms	Cause of Death	Heart Wt.	Iron Content mg./100 Gm. dry	Histology
661	57 Male	Skin pigment Diabetes, 1 yr. Ascites	Hepatic insufficiency	395	L.V. 695 R.V. 704	Fibrosis 0 Degeneration ++++
185	50 Male	Leukemia Multiple transfusions	Leukemia	397	L.V. 724 R.V. 702	Fibrosis + Degeneration ++++
94	73 Male	Pigmentation of skin Cirrhosis	Phlegmonous enteritis Fracture of femur	334	L.V. 487 R.V. 504	Fibrosis ++++ Coronary a. Sclerosis Inflammatory reaction
236	69 Female	Pigmentation of skin Thrombocytopenia Cirrhosis	G.I. hemorrhage Uremia	340	L.V. 196 R.V. 193	Fibrosis + Degeneration ++ Inflammatory reaction

Table 3

HEMOCHROMATOSIS, LOW IRON

A	Age	Symptoms	Cause of Death	Heart Wt.	Iron Content mg./100 Gm. dry	Histology
194	61 Male	Pulmonary tbc., 20 yrs. Pigmentation of skin Diabetes, 10 yrs.	Cirrhosis Advanced active pulmonary tbc.	295	L.V. 51.2 R.V. 60.4	Fibrosis, minimal Coronary a. Sclerosis, moderate
390	56 Male	Pigmentation of skin Diabetes Cirrhosis, 2 yrs.	Hepatic insufficiency	345	L.V. 44.4 R.V. 42.7	Fibrosis + Coronary a. Sclerosis, moderate
660	69 Male	Pigmentation of skin Cirrhosis No diabetes	Adenocarcinoma of rectum	290	L.V. 71.6 R.V. 70.3	Fibrosis + Coronary a. Sclerosis, moderate

Table 4

postmortem examinations described extensive deposition of hemosiderin and myocardial degeneration with fibrosis.

In the present study of 11 cases of hemochromatosis, a group of 4 had cardiac failure. Compared with another group of four without cardiac failure, there was no significant difference in iron content. All cases had an increase from 10 to 18 times the normal. There was no striking variation between the extent of iron deposited in the right ventricle, left ventricle or septum. Degenerative changes in the myocardium were constant, present in all cases, and were proportional to the extent of hemosiderin deposition. Heavy deposition of iron *per se* could not be demonstrated as the causative agent in the production of fibrosis. Fibrosis was present in varying degrees of severity in 9 of 11 cases. These cases all showed evidence of strain on the heart as seen in coronary artery sclerosis, hypertension, anemias or in a variety of toxic and infectious diseases.

It has long been customary to attribute cardiac failure to anatomic changes in the heart. Nevertheless, there are many instances in which there is a great disparity between the pathologic changes and clinical evidences of cardiac impairment so that the anatomic alterations in the heart cannot be considered a satisfactory explanation. The visible anatomic abnormalities seen in the heart as a result of huge accumulations of iron are inadequate to account for the cardiac disorders associated with hemochromatosis. It has not been demonstrated that iron in the form of ferric hydroxide polymers, ferritin and hemosiderin by themselves will bring about cell destruction with consequent fibrosis. Support of this view is found in a related field in the work of Gillman *et alii*[11] that the pigment in human cytosiderosis is inert and will not produce cirrhosis. In idiopathic pulmonary hemosiderosis Wyllie,[12] has shown that iron demonstrable as Prussian blue is not responsible for fibrosis.

Ultimately the cause of cardiac disturbances in hemochromatosis must be sought in disturbances of the chemical processes which provide for the energy for transformation into mechanical work. It may be that products of the degenerating myocardial cells by precipitating proteins indiscriminately have an important deleterious but invisible change in the function or structure of the contractile muscle tissue. Recently, Racker and Krimsky[13] have called attention to the inhibitory action of iron on the important triose phosphate dehydrogenase enzyme. Significant disturbances of the glycogen cycle, with reduction in concentrations of phosphorous and potassium and concomitant loss of adenosene triphosphoric acid all vitally impair myocardial efficiency. A last factor to be considered is the recent work of Schorr and Mazur,[14] who have demonstrated the role of ferritin leading to vasodepressor action, shock and its sequelae.

CONCLUSIONS

(1) The hearts of 11 patients with hemochromatosis including two patients with "exogenous hemochromatosis" were studied.

(2) Chemical determinations revealed 2 to 19 times the normal iron content. There was no noteworthy variation between the iron content of the right and left ventricles.

(3) In four patients there was congestive failure. There was no correlation between the iron content of the ventricles and the presence of failure.

(4) Degeneration associated with the increased iron content of the myocardium was constant in all 11 cases. Nine cases revealed fibrosis which was not related to the hemosiderin *per se*. These cases had associated coronary artery sclerosis, hypertension, anemia, toxic or infectious diseases.

(5) The histologic and chemical changes of the "exogenous" type showed no noteworthy differences from the "idiopathic" type.

(6) Chemical and physiologic changes as a result of excessive iron storage are postulated.

REFERENCES

1. Farrar, G. E.: J. Biol. Chem., **110**:685, 1935.
2. Sheldon, J. H.: Haemochromatosis. London: Oxford Univ. Press, 1935.
3. Cantarow, A.; and Bucker, C. J.: Arch. Int. Med., **67**:333, 1941.
4. deGenes, L.; De la rue and de Vercourt, R.: Press Med., **44**:377, 1936.
5. Blumer, G.; and Nesbit, R. R.: New Eng. J. Med., **218**: 295, 1938.
6. Horns, H. L.: Am. J. Med., **6**:272, 1949.
7. Tucker, H. St. G.; Moss, L. F.; and Williams, J. P.: Am. Heart J., **33**:993, 1948.
8. Kerr, W. J.; and Althausen, T. L.: Endocrinology, **17**:621, 1933.
9. Petit, D. W.: Am. Heart J., **29**:253, 1945.
10. Griffin, W. R.; Nelson, H. G.; and Seal, J. R.: Am. Heart J., **39**:904, 1950.
11. Gillman, J.; Mandlestom, J.; and Gillman, T.: South African J. M. Sci., **10**:109-136, 1945.
12. Wyllie, W. G.; Sheldon, W.; Bodian, M.; and Barlow, A.: Quart. J. Med., **17**:25-48, 1948.
13. Racker, E.; and Krimsky, I.: J. Biol. Chem., **173**:519, 1948.
14. Mazur, A.; and Schorr, E.: J. Biol. Chem., **176**:771, 1948.

DISCUSSION (*Abstract*)

Dr. M. Pinson Neal, Columbia, Mo.—It would be of interest to know (1) the comparative values of the iron content in other organs, particularly the liver; and (2)

what consideration and correlation, if any was given the non-iron staining granular material, hemofuscin which is also present in hemochromatosis.

Dr. Keschner (closing).—The anatomical diagnosis of hemochromatosis was based upon the histologic demonstration of iron staining granules in the skin, lymph nodes and viscera; particularly liver and pancreas, and the associated fibrosis in these organs. Inasmuch as the majority of our cases had quantitative iron determinations on involved organs, it would have been interesting if we had compared the iron content of the heart with other organs. This is beyond the scope of the present investigation.

As far as hemofuscin is concerned, we are impressed with its occurrence in striking amounts along with the iron containing pigment. The hemofuscin appeared to vary in color from gray to yellow to brown. It was devoid of iron and we accepted it as representing several different substances, produced in the same or different cells as a result of abnormal metabolism.

CYCLODIALYSIS*

A SIMPLIFIED TECHNIC

By JAMES H. ALLEN, M.D.
New Orleans, Lousiana

Heine[1] in 1905 reported an operative technic devised to produce a communication between the anterior chamber and suprachoroidal space. According to his description of the operation, which he called cyclodialysis, a conjunctival incision was made 8 to 9 mm. from the limbus, between the recti muscles, in one of the four quadrants. After the sclera was bared, a 3 mm. incision was made through it, approximately 5 mm. posterior to and concentric with the limbus. Through this incision a spatula was passed between the ciliary body and sclera until the tip extended approximately 2 mm. into the anterior chamber. Then the spatula was swept or rotated backward through an angle of approximately 90° first on one side then on the other (*Fig. 1*). The spatula thus severed the scleral spur (*Fig. 2*) and separated the sclera and somewhat less than one-fourth of the anterior portion of the ciliary body.

Several modifications of this operation have been developed. Blaskovics[2] made the scleral incision radially just anterior to the superior rectus tendon insertion. He introduced the spatula circumferentially or parallel to the limbus and swept it forward into the anterior chamber first on one side of the incision then on the other (*Fig. 3*). Blaskovics thought this produced the separation of ciliary body from scleral spur (*Fig. 4*) along a natural line of cleavage and thus reduced trauma to ciliary body and iris. However, the extent of separation was approximately the same as in the Heine technic.

O'Brien[3] considered the area of dialysis too small. Thus from Heine's type of scleral incision he introduced a Laird spatula directly into the anterior chamber, and by partially withdrawing and making repeated thrusts he separated the ciliary body from the scleral spur in approximately half its extent. He also emphasized gentle handling of the tissues and careful control of bleeding.

Lee and Allen[4] in a discussion of technics, suggested that the scleral incision be made nearer the limbus. They cited observations[5] to substantiate Heine's contention that the operation functioned because it permitted aqueous to pass from the anterior chamber into the suprachoroidal space. They pointed out that on anatomical grounds separation of the ciliary body from the scleral spur would accomplish this purpose,* and that passage of the spatula between the ciliary body and sclera as far back as advocated by Heine and Blaskovics frequently would break anterior ciliary vessels which penetrate sclera and cross the suprachoroidal space anterior to the recti muscles within 2 to 4 mm. of the limbus. On the basis of these facts, Lee and Allen made their incision 2 to 3 mm. posterior to and parallel with the limbus in one of the four quadrants (*Fig. 5*). They limited the action of the spatula to the region of the scleral spur using O'Brien's multiple thrust technic (*Figs. 6* and *7*). They emphasized O'Brien's point of separating the scleral spur over approximately half of its extent. Finally they reported that basal iridectomy could be performed through their scleral incision, thus increasing the usefulness of this type of operation without having to make a second incision as previously advocated by Wheeler.[6]

The following technic is a further simplification of the operation based upon these same principles.

The conjunctiva and Tenons capsule are incised just anterior to the insertion of the superior rectus muscle and flap turned downward to expose the limbus (*Fig. 8*). Bleeding is controlled

*Read in Section on Ophthalmology and Otolaryngology, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

*The ciliary body and choroid are attached firmly to the sclera at the scleral spur, around the venae vorticosae and in the vicinity of the optic nerve. In between the loose connections covered by endothelial cells actually form a maze of interconnecting potential spaces, the suprachoroidal lymphatic space of Schwalbe.

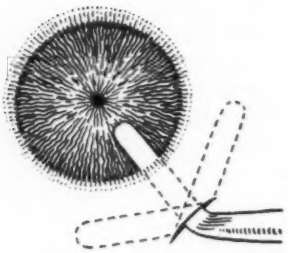


Fig. 1
Schematic illustration of Heine technic.

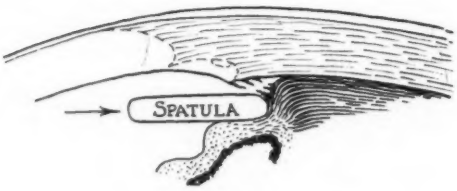


Fig. 2
Course of spatula in Heine technic.

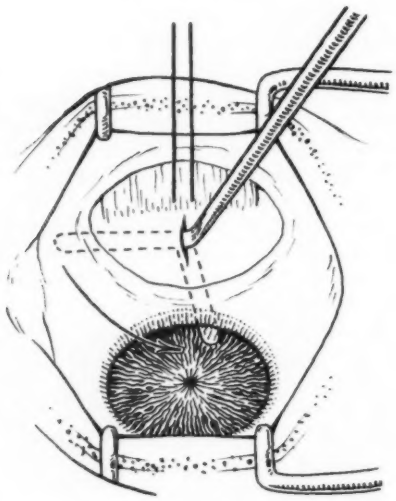


Fig. 3
Blaskovics technic.

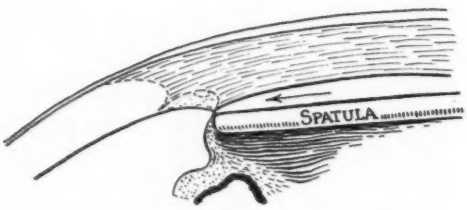


Fig. 4
Course of spatula in Blaskovics technic.

by cautery. Two fixation sutures are placed in the sclera adjacent to the limbus, one just on either side of the 12 o'clock meridian. While tension is being maintained on the fixation sutures, a 3 mm. radial incision is made in the sclera at 12 o'clock, beginning at the limbus. This incision is carried carefully down to the ciliary body then extended forward into the cornea and anterior chamber under the conjunctival flap by

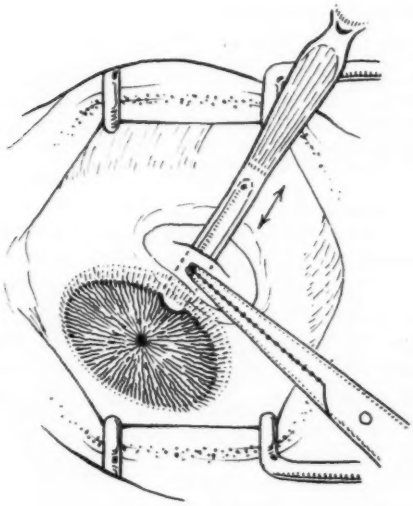


Fig. 5
Lee and Allen technic.

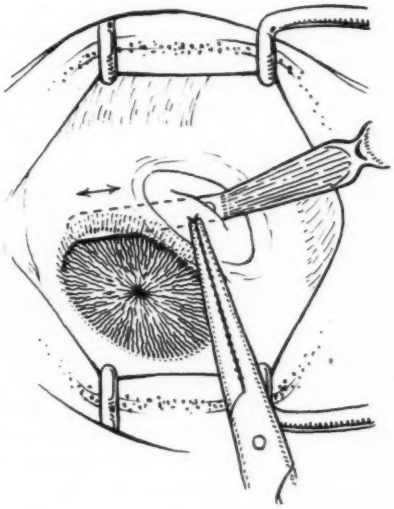


Fig. 6
Lee and Allen technic.

reversing the direction of the stroke of the knife (*Fig. 9*). The incision is thus just large enough to permit the introduction of a Laird spatula, and by making tension on the fixation sutures the operator may see the ciliary body, the chamber angle and the root of the iris. The Laird spatula is introduced and passed between sclera and ciliary body breaking the scleral spur in one stroke down to the horizontal meridian on one side (*Fig. 10*). The spatula is then removed, turned, reintroduced on the other side and passed down to the horizontal meridian on that side (*Fig. 11*).

This completes the simple cyclodialysis. The fixation sutures are removed, and the conjunctival flap is sutured into place with 3 or 4 interrupted 0000 mild chromic catgut sutures.

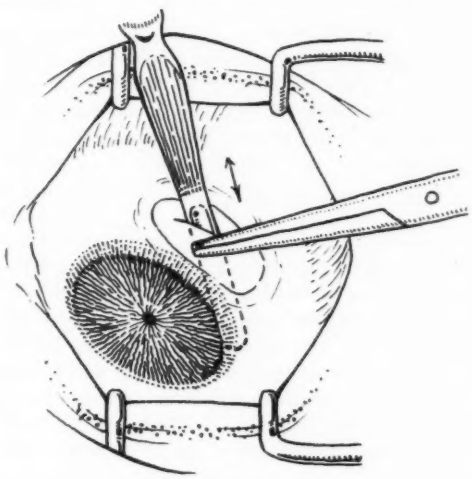


Fig. 7
Lee and Allen technic.

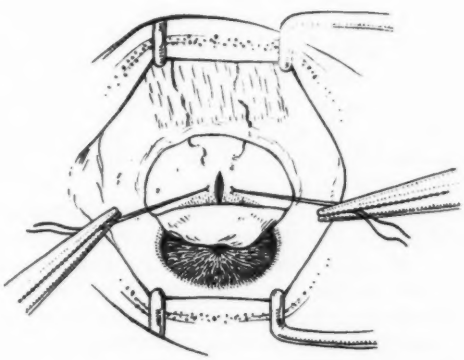


Fig. 8
Simplified technic, incision spread by traction on fixation sutures.

However, one of the principal advantages of this technic is that iridectomy may be performed after the cyclodialysis with a minimum of effort

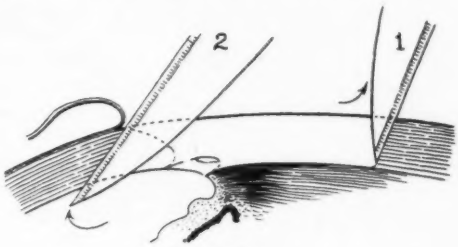


Fig. 9
Schematic drawing of extent of scleral incision and direction of strokes of blade.

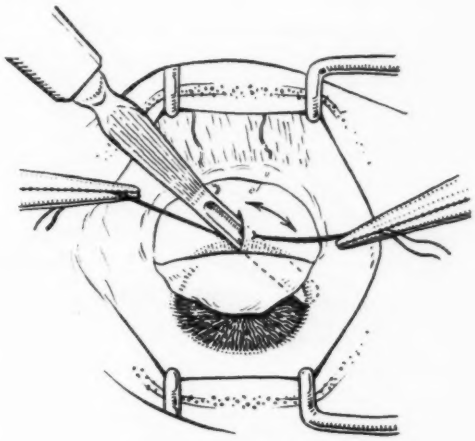


Fig. 10
Laird spatula breaking scleral spur temporally.

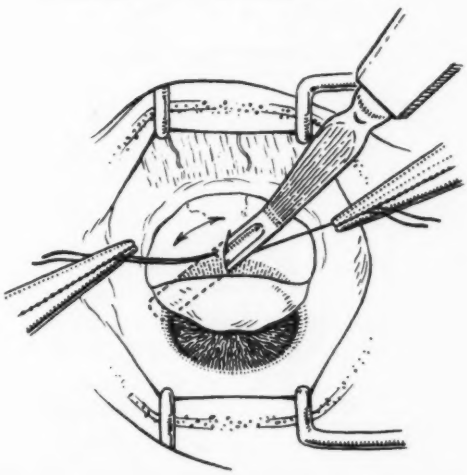


Fig. 11
Breaking scleral spur nasally.

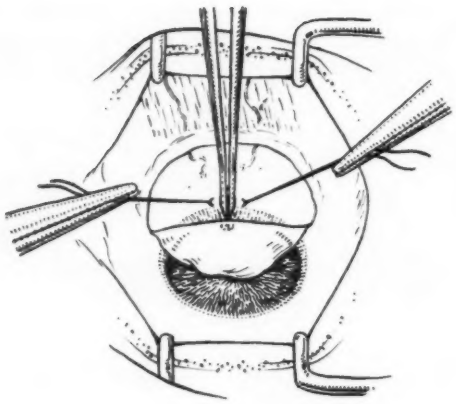


Fig. 12
Introduction of iris forceps.

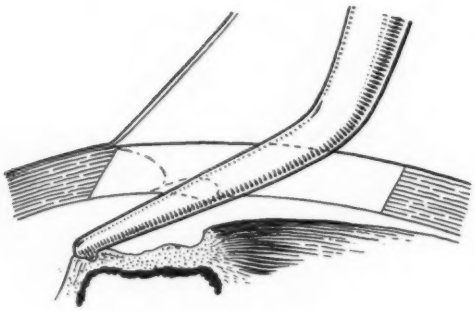


Fig. 13
Schematic drawing to show iris in grasp of forceps visible through cornea with conjunctival flap turned upward.

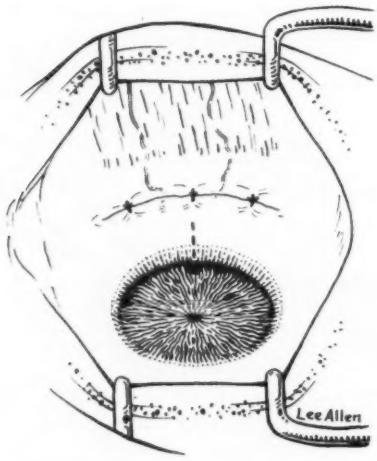


Fig. 14
Cyclodialysis and peripheral iridectomy completed, conjunctival flap sutured.

and trauma. While tension is made on the fixation sutures to separate the wound, curved iris forceps are introduced (*Fig. 12*). The flap is turned back off the cornea, and the iris is picked up in the forceps under direct observation through the cornea (*Fig. 13*). The iris is pulled out, and an iridectomy or an iridotomy is performed. A peripheral iridectomy usually is chosen. The iris is allowed to fall back into place or is gently reposited, the fixation sutures are removed, the conjunctival flap is replaced, and the wound closed by 3 or 4 interrupted 0000 mild chromic catgut sutures (*Fig. 14*).

Postoperative Care.—A light dressing is applied for 3 to 5 hours or until the anesthesia has worn off. When the dressing is removed, the eye may be palpated or massaged providing the chamber has reformed. The eye is observed twice daily thereafter, usually for 3 to 6 days. At these times the tension is taken digitally and the eye is massaged if necessary. If there is any reaction, either homatropine, 5 per cent of scopolamine, 0.2 per cent, may be used until it subsides.

DISCUSSION

Site of Operation.—The scleral incision may be made at the limbus in any meridian and the scleral spur is broken for approximately 90° on either side of the incision. However, unless contraindicated by the findings at gonioscopic examination or by previous surgical intervention, a 12 o'clock incision is preferred. This, as pointed out by Lee,[7] permits the cleft to remain free should hemorrhage occur into the anterior chamber. Should a second operation be required, the 6 o'clock meridian is then used.

The Scleral Incision.—By making the incision meridionally across the limbus and into the anterior chamber, several advantages are obtained: (1) the scleral spur is divided by the incision, thus preparing for its further separation by the spatula; (2) the spatula tip is kept in view through the margin of the cornea at all times, thus reducing the chance of injury to the ciliary body; (3) the spatula may be passed beyond the horizontal meridian on either side with less danger of disturbing the long ciliary vessels and nerves as they penetrate the ciliary body approximately 3 mm. posterior to the limbus; (4) iridectomy or iridotomy may be performed with ease; and (5) the anterior ciliary vessels are not

disturbed by either the incision or the spatula, thus reducing hemorrhage at the time of operation.

Hemorrhage.—Hemorrhage into the anterior chamber at the time of operation may be due to bleeding from the scleral incision, bleeding from broken anterior ciliary vessels, bleeding from anomalous vessels in the chamber angle, or generalized bleeding from the iris vessels due to sudden release of high pressure. Most of this bleeding may be prevented. Careful control of episcleral bleeding by cautery while turning down the flap will permit the scleral incision to be made in a dry field, and the anterior ciliary vessels may be seen as they pass forward on the scleral surface from the muscle tendons. They penetrate the sclera and cross the suprachoroidal space perpendicularly from 2 to 4 mm. posterior to the limbus. Therefore, these vessels may be avoided in making the incision and by keeping the spatula anterior to them while breaking the scleral spur. Anomalous vessels in or near the angle may be observed gonioscopally before operation in some cases. If they occupy only a small portion of the angle, they may be avoided by not including that portion of the angle in the operative field. However, in some cases it will be impossible to view the angle preoperatively, and in these cases the procedure will have to be made "blindly." Cases of high tension should be treated medically to reduce the tension as much as possible before surgical intervention. In addition, the tension may be lowered gradually at the time of extending the incision into the anterior chamber. Both of these procedures will reduce the tendency toward bleeding.

Postoperative hemorrhage usually is the result of trauma but may occur with very slight trauma in patients with diabetes, vascular disease, and blood dyscrasias. Therefore, unless there is a definite tendency for the eye to become firm or hard, only gentle palpation is employed in these patients for the first 5 or 6 days. Thereafter, massage is increased or discontinued as indicated by the palpation.

Iritis.—Traumatic iritis usually develops to some extent after any operative procedure on the anterior segment of the eye. With ordinary skill and care in handling ocular tissues, only a mild reaction develops following this procedure. Occasionally it is necessary to use homatropine or scopolamine for a few days to control the reaction.

Indications.—This simplified technic of cyclodialysis with the addition of iridectomy or iridotomy makes the procedure useful in any type of glaucoma. It has the advantage of not interfering with the performance of an external filtering operation at a later date if that should become necessary, and at the same time causes much less disturbance in the appearance of the eye. Furthermore, it may be repeated if not entirely successful on the first or even second attempt. Therefore it is beginning to be considered as the initial method of surgical treatment of glaucoma.

SUMMARY

A simplified procedure for cyclodialysis either with or without combined iridectomy or iridotomy is presented. The radial incision through the sclera at the limbus permits separation of ciliary body from scleral spur over approximately half the extent of the spur. It reduces trauma and the danger of hemorrhage. It does not interfere with more radical surgery later and, therefore, may be considered as the initial method when surgery becomes necessary in glaucoma.

BIBLIOGRAPHY

1. Heine, L.: Die cyklodialyse, eine neue Glaucomoperation. Deutsche. Med. Wchnschr., **31**:824-826 (May) 1905.
2. Blaskovics, L.: Cyclodialysis inversa, Szemezet, **70**:5-21 (Sept. 30) 1935.
3. a. O'Brien, C. S.: Instructions in Ophthalmic Surgery, University Hospitals, Iowa City, Iowa.
   b. O'Brien, C. S.: Surgical Treatment of Primary Glaucoma. Arch. Ophth., **37**:134-138 (Feb.) 1947.
   c. O'Brien, C. S.; and Weih, Jack: Cyclodialysis. Arch. Ophth., **42**:606-619 (Nov.) 1949.
4. Lee, Otis S.; and Allen, James H.: Cyclodialysis: A Discussion of Techniques. Amer. J. Ophth., **32**:1713-1718 (Dec.) 1949.
5. a. Elschnig, A.: Zur Wirkungsweise der Cyklodialyse. Ber. u. d. Versamml. d. deutsch. ophth. Gesellsch., **49**:277-280, 1932.
   b. Barkan, O.; Boyle, S. F.; and Maisler, S.: Mode of Action of Cyclodialysis. California and West. Med., **44**:12-16 (Jan.) 1936.
   c. Burr, S. P.: Personal communication.
6. Wheeler, J. M.: Iridectomy with Cyclodialysis for the Reduction of Ocular Tension. Arch. Ophth., **16**:569-577 (Oct.) 1936.
7. Lee, Otis S.: The Cyclodialysis Operation. The Journal of the Iowa State Medical Society, **11**:115-119 (March) 1950.

DISCUSSION (*Abstract*)

Dr. R. Allen Lawrence, Jr., Nashville, Tenn.—Dr. Allen, do you use any modifications in the technic on the eye?

Dr. Allen (closing).—No, sir. If the upper or the twelve o'clock meridian is sufficiently disturbed by the cataract procedure, we make the scleral incision at six o'clock. That is about the only modification we have to make in the technic, variation in the location of the scleral incision.

THE NEUROSURGICAL ASPECTS OF SPONTANEOUS SUBARACHNOID HEMORRHAGE*

By J. G. LYERLY, M.D.
Jacksonville, Florida

Hemorrhage in the spinal fluid spaces of non-traumatic origin is usually regarded as spontaneous subarachnoid hemorrhage. The bleeding originates in the spinal fluid spaces outside the ventricular system, although hemorrhage into the latter may contaminate the entire spinal fluid system. The hemorrhage occurs without warning, coming from a ruptured blood vessel near the base of the brain, although other locations may be involved. The cause of the hemorrhage and the nature of the underlying lesion are points of great importance in the management and treatment of this condition.

Bramwell[1] is said to have written the first paper on subarachnoid hemorrhage in 1886. Since then the paper by Symonds[2] in 1923 awakened interest in the subject and recognized that the cause of the hemorrhage was frequently a rupture of an intracranial aneurysm. Other papers of interest have been by Strauss[3] and his co-workers, Sands,[4] Richardson and Hyland,[5] Smith,[6] and many others. Most of the papers written twenty or more years ago were concerned chiefly with the cause and symptoms of subarachnoid hemorrhage. The treatment was for symptomatic relief and little was done for the cure of the condition. During the past ten years, Dandy[7] and many other neurosurgeons have contributed papers upon the surgical treatment of intracranial aneurysms which are one of the frequent causes of spontaneous hemorrhage.

It is recognized that subarachnoid hemorrhage may arise from a ruptured blood vessel associated with cerebral arteriosclerosis. In this group, one sees the degenerative changes, thickening, and atheromatous lesions of the cerebral vessels in patients of the older age group often with vascular hypertension. The hemorrhage in this group is frequently situated in the internal capsule with signs of paralysis on the opposite side of the body. The blood may get into the spinal fluid spaces from rupture into the ventricles or into the subarachnoid fluid spaces near the basal cisternae. There is said to be a mycotic group in which infectious emboli from endocarditis, or from other sources in the body, may lodge in a smaller cerebral vessel to cause an arteritis and a weakening of the vessel wall with rupture and extravasation of blood into the subarachnoid spaces. This group is not so frequent as one would assume from reading the literature. Intracranial aneurysms are recognized as one of the frequent causes of spontaneous subarachnoid hemorrhage. They are of congenital origin due to a weakness of the middle coat of the artery. Forbus[8] showed that there is an absence of the media of the cerebral arteries at the point of bifurcation in many cases, and that this is a frequent cause of intracranial aneurysms. They are situated on the intracranial portion of the internal carotid artery and its branches and about the circle of Willis. It cannot be said that all of them originate at a vessel bifurcation, since many aneurysms found at operation and autopsy would appear to be situated on a vessel where there were no branches. It is true these aneurysms occur in the middle and younger age groups without vascular hypertension and degenerative changes in the blood vessels, and no doubt there is a congenital basis for their origin.

Most of these aneurysms do occur on the internal carotid artery and its branches forming the anterior part of the circle of Willis, a knowledge of which is of importance in dealing with the surgical treatment. Less frequently they are found in the posterior fossa of the skull arising from the branches of the vertebral and basilar arteries, and in the occipital areas from involvement of the posterior cerebral and the posterior communicating arteries of the circle of Willis.

The symptoms of a ruptured intracranial aneurysm are manifest by a sudden severe pain in back of the head and neck, frequently starting in the frontal and temporal regions on the side of the rupture. There may be unconsciousness for a few minutes, and nearly always there is nausea and vomiting. Sometimes there are motor weakness and sensory changes on the opposite side of the body. A palsy of one or more of the cranial nerves on the same side may give an indication as to the location of the ruptured vessel. One finds a rigidity of the neck and a positive Kernig sign, fever, leukocytosis and mental delirium. Subarachnoid hemorrhage is frequently mistaken for meningitis, brain tumor, brain abscess, and uremia. The increased intracranial pressure, shown by bradycardia, stupor

*Read in Section on Neurology and Psychiatry, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

and unconsciousness, and sometimes edema of the optic discs with tortuosity of the retinal vessels, would be in keeping with a brain tumor. The fever, leukocytosis, stiff neck and a positive Kernig sign would suggest meningitis, or an acute brain abscess. Urological and blood chemistry studies should rule out uremia.

The history of onset of the neurological symptoms and findings, including a spinal fluid study, should clear up the diagnosis. The spinal fluid will be under increased pressure and uniformly bloody in all collected specimens. It will be reddish from fresh bleeding and of a yellowish color when the hemorrhage has existed more than a few days. The test tube will show a supernatant yellow fluid on standing, with sediment of blood pigment at the bottom.

The prognosis of subarachnoid hemorrhage may depend on the severity of the hemorrhage, the location and size of the ruptured vessel, and the importance of the area involved. The patient may survive the first attack or succumb to the second attack, but usually does not survive the third attack of rupture. It is said that the mortality from the first attack is less than 50 per cent, but the mortality rate increases progressively with subsequent ruptures. No doubt in slight ruptures and bleeding from small vessels there may occur a thrombosis and occlusion of the bleeding point resulting in a spontaneous cure. We see frequent cases where an initial attack is followed in two or three weeks time by a second, or a third one, from which there may be no recovery.

Since it is recognized that a frequent cause of subarachnoid hemorrhage is an intracranial aneurysm, the question arises as to what should be the course of procedure. It is important that a spinal fluid examination be done, preferably 24 hours after the onset of the rupture in order to give the bleeding a chance to stop. The fluid should be withdrawn slowly and the pressure reduced to one-half of the original reading. The spinal puncture certainly makes the patient more comfortable and probably does not increase the tendency to further hemorrhage.

Repeated spinal punctures may be done within a day or two to give the patient symptomatic relief. Probably the drainage of the blood is not important, since nature can remove it more effectively than one can with a lumbar puncture needle. It is important that the patient should be told not to strain at urination, defecation, or on physical exertion, for fear of causing another hemorrhage. A retention catheter, small laxatives, and a prolonged period of bed rest may offset this complication.

In spontaneous subarachnoid hemorrhage a surgical intracranial lesion such as an aneurysm should be regarded as being present until proved otherwise. A new field was opened by Moniz[9] in the diagnosis of cerebral vascular anomalies by a method known as arteriography, when he injected a contrast medium into the carotid or vertebral arteries to obtain their outline on the x-ray film. Colloidal thorium dioxide was used by the earlier workers because it gave a good outline of the vascular system and it seemed nontoxic. However, it is radioactive and accumulates in the liver and spleen to cause harm at a later date. Iodopyracet was used in 50 and 70 per cent solution with good results by Gross[10] for intracranial arteriography, but the stronger solutions occasionally produce convulsions and signs of cerebral irritation. Since then, other workers[11] have used 35 per cent iodopyracet satisfactorily and without any material irritative phenomena. It does not accumulate in the body, is rapidly eliminated through the kidneys, and if desired an outline of the urinary tract may be obtained on x-ray films a few minutes after the injection. A small percentage of the patients may show a sensitivity to the drug in the nature of a shock reaction, so that it is usually best to precede the injection by an intradermal or a conjunctival diagnostic test. An arteriogram should be done in all cases of subarachnoid hemorrhage. An aneurysm cannot be excluded without it, unless the neurological findings and the x-ray films give presumptive evidence of such a cerebral lesion. It may be done on the side of the suspected lesion, and on both sides if the localization is not certain. A knowledge of the adequacy of the contralateral circulation is important when a carotid ligation is to be done.

For the carotid injection it is important to use a general anesthetic as intravenous sodium thiopental. It lessens the danger of convulsive movements and muscular twitchings sometimes seen with local anesthesia alone. In addition to general anesthesia, procaine may be infiltrated about the carotid sheath to lessen the arterial spasm brought about by the attempts at insertion of the needle. A 19-gauge lumbar puncture needle is inserted by the closed method, and if this fails, a cut-down is done on the common carotid artery to insert the needle under direct vision. Ten to 15 cc. of 35 per cent iodopyracet are used, and

three x-ray films are exposed at one-second intervals toward the end of the injection. The first series of films covers the lateral view of the skull, after which a second injection may be made for the anteroposterior views.

The time for making the arteriogram after the initial subarachnoid hemorrage is arbitrary. It may be made safely during the first week after the hemorrhage, and before the second week when another attack may occur. Sometimes the patient will have had a second or a third rupture before he is first seen, and the arteriogram may be made at that time. One patient had a second rupture on the way to the operating room for the arteriogram and, on arrival there, was in coma with one-sided paralysis. Immediately a cut-down was done, and a temporary ligature was put on the common carotid artery to help stop the bleeding. Immediately an arteriogram made of the carotid circulation demonstrated an aneurysm involving the beginning of the middle cerebral artery. After the arteriogram is made and an aneurysm is demonstrated, one may ligate the carotid artery immediately while the artery is exposed. The internal carotid artery is occluded by the fractional method of Kerr, using a piece of fascia sutured around the artery to occlude it 50 per cent. More recently a molded tantalum clamp is placed over the internal carotid artery to obtain the same result. After waiting ten days or two weeks, the internal carotid in the neck is again exposed under local anesthesia and clamped off completely for 15 or 30 minutes to see whether neurological signs will develop. If none develop, the artery is permanently occluded by compressing the tantalum clamp and ligating the artery above or below the clamp with a ligature. In older persons one may not wish to take the risk of permanent occlusion of the internal carotid artery, even by the fractional method, in which case the common carotid artery may be ligated, thereby preserving some circulation between the internal and the external carotid arteries. After the carotid ligation in the neck one will have to decide whether to turn down an osteoplastic flap to expose the aneurysm and control the vessels above the lesion. Should the aneurysm involve one of the peripheral vessels of the internal carotid, the first choice may be to turn down an osteoplastic flap and attack it directly. With all operations for intracranial aneurysms and angiomatous growths, it is best to have the carotid in the neck under exposure to apply a clamp should a severe intracranial hemorrhage occur during the exposure.

The arteriograms selected for study were made during the past three years, since the x-ray films were available for this period. As seen in *Table 1* there were 34 cases which had arteriographic studies for intracranial vascular lesions with subarachnoid hemorrhage. There were eight with proved aneurysms and three with angiomatous malformations. Eight were considered unsatisfactory from the technical standpoint, and for various reasons they were not repeated. Fifteen were normal.

THREE YEAR SERIES

Arteriograms	34
Aneurysms	8
Angiomata	3
Unsatisfactory	8
Normal	15

Table 1

Some of the illustrative cases are herewith reported:

Case 1.—R. C., a 44-year-old woman, consulted Dr. J. E. L. on April 10, 1949. Eight weeks previously the patient had a subarachnoid hemorrhage manifested by sudden severe headache and vomiting with partial paralysis of the right side and a uniformly bloody spinal fluid. She had been kept in bed for six weeks and then allowed to return to work for the previous two weeks. The preceding night while riding in an automobile, she suddenly had severe headache, dizziness, and became unconscious for a few minutes. On admission to the hospital she was stuporous, cold, and clammy, with small pupils and weakness of the right face and arm. Her blood pressure was 150/80. There was stiffness of the neck and a Babinski sign on the right side. The diagnosis was spontaneous subarachnoid hemorrhage with rupture of intracranial aneurysm on the left side. Preliminary x-rays of the skull were negative; spinal fluid Kahn was negative. On April 14, 1949, an arteriogram was done by cutting down on the left common artery for injection of iodopyracet. This showed a saccular aneurysm 1.5 cm. in diameter in the region of the left anterior cerebral artery. Immediately after the arteriogram, a molded tantalum clamp was placed over the left internal carotid artery to occlude it 50 per cent. On April 23, 1949, the neck wound was opened and the tantalum clamp was compressed completely to occlude the internal carotid artery, and at the same time the artery was ligated above the clamp with a No. 2 chromic catgut ligature. While this procedure was being done, the motor power on the right side remained good. On April 30, 1949, a left frontal osteoplastic flap was turned down and the aneurysm was exposed. The aneurysm was a bluish mass one cm. in diameter lying above and in front of the internal carotid artery and having

its origin from the anterior cerebral artery. Silver clips were placed on the artery about the sac. The patient made a good recovery from the operation without any paralysis or any residuals of importance. She was seen in August, 1949, has made a good recovery and has returned to work as a saleslady.

Case 2.—L. W., a 49-year-old woman, was referred by Dr. D. B. Y., Lake City, Florida, December 10, 1948. She had had headaches for the previous three years and ptosis of the left upper lid with diplopia for the previous fifteen months. Ten days before, she had severe sudden headache and vomiting with signs of a spontaneous subarachnoid hemorrhage. On examination there was complete left third nerve paralysis with exophthalmos, hypalgesia of the first division of the left fifth nerve, and a pale atrophic optic disc on the left. There was right lower facial weakness, and the right knee jerk was greater than the left. The Kahn was negative. X-rays of the skull were negative. On December 14, 1948, the left common carotid artery was exposed and an arteriogram done using iodopyracet outlined an aneurysm 1.67 cm. in diameter arising from the internal carotid artery just below the anterior communicating branch. A tantalum clamp was placed on the left internal carotid artery partially to occlude it. On December 21, the tantalum clamp was closed to occlude the artery. Following this there was no motor weakness of the right side. On December 23, 1948, a left frontal osteoplastic flap was turned down and the aneurysm was exposed. The anterior cerebral artery and the anterior communicating branch were identified and silver clips were placed on them. Also two silver clips were placed on the internal carotid below the aneurysm. She was discharged on January 6, 1949. Further reports would indicate that she has made a good recovery, but she still has a third nerve paralysis.

Case 3.—S. C., a 39-year-old woman, consulted Dr. R. J. P., Jr., on July 15, 1948. Six days before, she had developed a mild occipital headache. Four days before she suddenly became unconscious with vomiting lasting for thirty hours. Two spinal punctures showed bloody spinal fluid. On examination, she was stuporous with a stiff neck and positive Kernig sign. The cranial nerves were negative. The signs pointed to a ruptured intracranial aneurysm with spontaneous subarachnoid hemorrhage, probably situated on the right side. On July 24, 1948, the right common carotid artery was exposed and an arteriogram made by injecting 20 cc. of iodopyracet showed a large saccular aneurysm about 2.5 cm. in diameter in the region of the right internal carotid artery. On the same date the right common carotid artery was ligated. On July 30, 1948, a right frontal osteoplastic flap was turned down to expose the large saccular aneurysm lying in the middle fossa just lateral to the circle of Willis. Several vessels just above and anterior to the aneurysm were closed with silver clips. It was impossible to expose other vessels for fear of rupturing the sac. The wound was closed. The neck wound was opened to expose the internal and the external carotid arteries which were doubly ligated just above the bifurcation. She made a good recovery without any complications. She was discharged from the hospital on August 12, 1948.

Case 4.—W. J., a 52-year-old man, consulted Dr. K. H. on May 17, 1948. The day before, while washing his car, the patient suddenly had a severe occipital headache and fell to the ground unconscious for a few minutes. He then got up and walked into the house. There was vomiting with no localizing signs. On examination, the neck was stiff, the pupils were small, and the eye grounds were normal. There was no paralysis. There was a Babinski sign on the left. The reflexes were less active on the left. A spinal puncture showed uniformly bloody spinal fluid. The diagnosis was ruptured intracranial aneurysm. Preliminary x-rays of the skull were negative. On May 29, he was taken to the operating room to expose the right common carotid artery for making an arteriogram. On arrival in the operating room there was severe retraction of the neck with unconsciousness, rapid breathing, and evidence of paralysis of the left side. A rapid exposure of the right common carotid artery was done; it was temporarily occluded with an umbilical tape. In the x-ray room, 12 cc. of iodopyracet were injected. X-ray films showed a saccular aneurysm on the right side in the region of the middle cerebral artery. Following this the common carotid artery was doubly ligated. He rapidly regained consciousness and the paralysis of the left side partially cleared up. June 4, a right fronto-temporal osteoplastic flap was turned down. On opening the dura hemorrhage was seen traveling along the sylvian vessels, and there was a large clot in the inferior mesial portion of the temporal lobe. On removing the clot, the sac of the aneurysm was found, and on search for entering vessels, there was profuse hemorrhage from the sac. This was controlled with some difficulty by a muscle graft, electro-coagulation, and the application of silver clips. After the operation he made a good recovery and was discharged from the hospital on June 19, 1948. He has been seen on numerous occasions since then; the paralysis has cleared up and he has returned to work.

Case 5.—J. H., a 40-year-old man, was referred by Dr. S. B. on May 26, 1949. Before admission to the hospital, the patient had suddenly become unconscious with vomiting, generalized convulsions, and difficult respirations, requiring artificial respiration and an iron lung for 24 hours. On examination he was in a coma with a blood pressure of 124/76. The left pupil was a little larger than the right, but the eye grounds were normal. He was seen to move all extremities. On the following day a spinal puncture showed extremely bloody spinal fluid and there developed a left third nerve paralysis, with tortuous vessels in the left eye ground. There was partial aphasia and paresis of the right face, arm, and leg. On May 27, 1949, the left common carotid artery was exposed and iodopyracet was injected for an arteriogram. This showed a good outline of the arterial tree on the left and a small aneurysm near the posterior communicating branch of the circle of Willis. A molded tantalum clamp was placed on the internal carotid artery to partially occlude it. On June 22, a left osteoplastic flap was turned down and a silver clip was applied on the posterior communicating artery where the small aneurysm had ruptured. The internal carotid artery was ligated. Following the operation he had a slight increase in aphasia and motor weakness of the right side. He was able to be up and walking around soon after the operation. On August 10, the

operative wound was opened because of an extracranial, subcutaneous operative cyst, and there was found an extradural cyst with three tiny openings in the dura through which spinal fluid was leaking. After opening the dura to inspect the brain cortex, which was yellowish and degenerated in appearance, the dural openings were closed. He was discharged on August 31, 1949, with slight aphasia and weakness of the right side. On December 29, 1949, he still showed motor aphasia but was able to walk and use his right hand for writing his replies. He was transferred to a Veterans Hospital for speech training.

Case 6.—M. P., a 48-year-old woman, was referred by Dr. A. S. M. on June 21, 1949. Since December, 1948, the patient had attacks of headache, nausea, vomiting, and drowsiness with seizures similar to attacks of subarachnoid hemorrhage. In February, 1949, the patient discovered that she had diabetes mellitus which required insulin. Since April, 1949, there was gradual failure of vision with inability to read. The eyes were examined by Dr. R. G., Jr., who found the vision to be 20/200 minus in each eye. In June, 1949, the visual field chart showed a great constriction of the fields with bitemporal hemianopsia. X-rays of the skull were negative except for a fairly large sella turcica which was considered within normal limits. The diagnosis was probable pituitary tumor. The neurological examination showed rather coarse facial features. The blood pressure was 120/70. There was bilateral primary optic atrophy. The blood Kahn was negative. On July 2, 1949, a right frontal osteoplastic flap was turned down and the pituitary region was explored lifting up the frontal lobe. There was found a fusiform enlargement with tortuosity of the right internal carotid artery representing an aneurysmal dilatation. This vascular anomaly was lifting up and compressing the right optic nerve and chiasm which were flattened and thinned out. The nerve was constricted and compressed as it entered the optic foramen. Upon further exploration toward the left side, the left internal carotid artery showed a similar enlargement with compression and upward elevation of the left optic nerve similar to that on the right but to a lesser extent. The operation consisted of removing the roof of the optic foramen on both sides to decompress the optic nerves. She was greatly improved from this operation and on July 9, 1949, the right internal carotid artery was exposed in the neck because it was the side of the larger malformation and an arteriogram was done by injecting iodopyracet. This showed the enlarged right internal carotid artery. The cervical portion of the artery was partly closed by suturing around it a piece of fascia. Following these procedures she made a good recovery. Her vision improved, and on July 26, 1949, it was reported the vision of the right eye was 20/30 and the left 20/30. The visual fields had returned to normal. The patient has been seen from time to time and there has continued to be steady improvement with normal vision.

Case 7.—T. E. Y., a 42-year-old man, consulted Dr. C. C. C. on June 9, 1950. This patient was seen on December 28, 1942 because of severe attacks of spontaneous subarachnoid hemorrhage as shown by a uniformly bloody spinal fluid. At that time a diagnosis of ruptured intracranial aneurysm was made and an arteriogram was recommended, but was refused. X-rays at that time showed calcification in the region of the right choroid plexus. He was again seen on June 9, 1950, because of recurrent attacks of severe headaches, vomiting, and dizziness with occasional convulsive seizures associated with numbness of the left side. On examination the patient's blood pressure was 160/100. The eye grounds and cranial nerves were normal, but there was hypalgesia of the left face, arm and leg. There was no motor weakness and the reflexes were normal. The blood and spinal fluid Kahns were reported negative. On July 6, 1950, a pneumo-encephalogram was done which showed a good outline of the ventricular system with faint strands of calcification above the right lateral ventricle in the parietal region. On July 8, 1950, an arteriogram done by injecting the right common carotid artery with iodopyracet showed a rather poor filling of the arterial system, but there was a fairly good concentration of the iodopyracet in the parietal region on the right side indicating a vascular mass lesion. On July 11, 1950, a right osteoplastic flap was turned down over the parietal area. The cortex was normal except for some enlargement of the blood vessels on the surface of the brain. By exploration with a ventricle needle a mass lesion was located about 3 cm. beneath the surface. A cut-down through the cortex was made and there was found a mass of tortuous curled-up, worm-like blood vessels over an area 3 cm. in diameter. This mass lesion was removed after applying silver clips on the peripheral vessels, and by electro-coagulation the bleeding was controlled. Following the operation he made a good recovery except for some motor weakness of the left side. He was last seen in September, 1950, and he was getting along well, but the left arm was slightly weak. The pathological diagnosis was calcified cavernous hemangioma, benign.

CONCLUSIONS

(1) Spontaneous subarachnoid hemorrhage represents a clinical finding which may simulate intracranial lesions as meningitis, abscess, tumor, and various toxic conditions with meningeal irritation.

(2) A careful neurological examination with spinal fluid studies will establish the diagnosis of subarachnoid hemorrhage. A search should be made for the cause which may be a ruptured aneurysm, leakage into the spinal fluid spaces from an intracerebral hemorrhage with arteriosclerosis, hemorrhage from a brain tumor or a vascular anomaly, or bleeding associated with meningitis or encephalitis.

(3) The patient may survive the first rupture of an intracranial aneurysm, but a second rupture may be expected in two or three weeks after the first; it frequently is fatal, while a third rupture is more often fatal.

(4) An intracranial aneurysm should be looked for in each case by doing an arteriogram with 35 per cent iodopyracet.

(5) The treatment of an intracranial aneurysm may require a fractional ligation of the internal carotid, or the common carotid artery, in the neck. In suitable cases an intracranial exposure should be made to trap off the vessels about the aneurysm.

REFERENCES

1. McIver, Joseph; and Wilson, George: Spontaneous Subarachnoid Hemorrhage. J.A.M.A., **93**:89-92 (July 19) 1929.
2. Symonds, C. P.: Contributions to the Clinical Study of Intracranial Aneurysms. Guys Hospital Reports, **73**:139, 1923.
3. Strauss, I.; Globus, J. H.; and Ginsburg, S. W.: Spontaneous Subarachnoid Hemorrhage. Its Relation to Aneurysm of Cerebral Vessels. Arch. Neurol. and Psychiat., **27**:1080, 1932.
4. Sands, I. J.: Aneurysms of Cerebral Vessels. Arch. Neurol. and Psychiat., **21**:37, 1929.
   Sands, I. J.; and Hymon, N. A.: An Intracranial Carotid Sinus Aneurysm of Long Duration. Ann. Int. Med., **12**:708, 1938.
5. Richardson, J. C.; and Hyland, H. H.: Intracranial Aneurysm. Med., **20**:1, 1941.
6. Smith, W. E.: Spontaneous Subarachnoid Hemorrhage. Sou. Med. J., **23**:494, 1930.
7. Dandy, W. E.: Intracranial Arterial Aneurysms. Ithaca, N. Y.: Comstock Publishing Co., 1944.
8. Forbus, W. D.: On the Origin of Miliary Aneurysms of the Superficial Cerebral Arteries. Bull. Johns Hopkins Hosp., **47**:239, 1930.
9. Moniz, Egas: L'Angiographie Cerebrale, Paris, Masson and Cie, 1934. Quoted by Gross.[10]
10. Gross, Sidney W.: Cerebral Arteriography by Means of Rapidly Excreting Organic Iodide. Arch. Neurol. and Psychiat., **44**:217, 1940.
11. Pool, J. L.; and Alexander, S.: Intracranial Arteriography with Rapidly Excreted Iodine Compound. N. Y. J. Med., **43**:1429, 1943.
    Poppen, J. L.: Intracranial Aneurysm in Fifty-one Proved Cases. Arch. Neurol. & Psychiat., **55**:293, 1946.
    Ingraham, Franc D.; and Cobb, Cully A., Jr.: Cerebral Arteriography: A Technique Using Dilute Diodrast. J. Neurosurg., **4**:422, 1947.
    Schwartz, H. G.: Arterial Aneurysm of the Posterior Fossa. J. Neurosurg., **5**:312, 1948.
    Ecker, Arthur; and Chamberlain, Richard H.: An Additional Approach to the Internal Carotid Artery for Cerebral Angiography. J. Neurosurg., **4**:444, 1947.
    Bassett, Robert C.: Intracranial Aneurysms. J. Neurosurg., **6**:216, 1949.
    Raney, Rupert; Raney, Aidan, A.; and Sanchez-Perez, J. M.: The Role of Complete Cerebral Angiography in Neurosurgery. J. Neurosurg., **6**:222, 1949.
    Chusid, J. G.; Robinson, Franklin; and Margules-Lavergne, M. P.: Transient Hemiplegia Associated with Cerebral Angiography (Diodrast). J. Neurosurg., **6**:466, 1949.
    Norlen, Gosta: Arteriovenous Aneurysms of the Brain. J. Neurosurg., **6**:475, 1949.
    Elvidge, Arthur R.; and Feindel, William H.: Surgical Treatment of Aneurysm of the Anterior Cerebral Artery and of the Anterior Communicating Arteries Diagnosed by Angiography and Electroencephalography. J. Neurosurg., **7**:13, 1950.
    Gass, Harvey; Weinberg, Sidney; Craig, Albert; and Thompson, John R.: Cerebral Angiography Recorded Cinefluorographically. J. Neurosurg., **7**:139, 1950.

DISCUSSION (*Abstract*)

Dr. Henry G. Schwartz, St. Louis, Mo.—Dr. Lyerly has presented cogent proof of the effectiveness of surgical intervention in the handling of a condition which, by conservative management, could carry a mortality of 50 per cent. His seven cases had excellent results following his technic of preliminary carotid ligation followed by intracranial attack on the lesion, and they are a tribute to his surgical skill. There can be no doubt that the lives of those patients have been saved. Perhaps more important, because he did attack these intracranially in five instances, and removed the aneurysm, these patients no longer have the sword of a threatened hemorrhage hanging over them.

Following Dandy's report, there developed a considerable amount of enthusiasm for intracranial trapping or clipping of aneurysms, and the results have been gratifying in most instances. We are all agreed that ideally, if the offending lesion is eradicated by direct surgery, both the physician and the patient feel gratified. There are some cases, however, in which the aneurysm is so situated that direct attack would result in severe neurologic deficit, and in such cases the less radical procedure of carotid artery ligation in the neck alone seems to be all that can be recommended. Since many of these have apparently done well for many years, it behooves us to consider seriously whether this limited operation may be worth while in other cases. I hope that Dr. Semmes can be prevailed upon to tell us of his results with neck ligation alone. Experiences such as his make some of us pause to consider how far we should continue to go in advising intracranial trapping. Whether the long-term follow-up will result in our giving up what would seem to be the ideal procedure is something for the future to decide.

Dr. Lyerly's method of preliminary partial ligation, of the internal carotid followed later on by intracranial surgery, is worthy of discussion. We have all felt that by partial ligation in the neck, the head of pressure may be reduced and intracranial circulation may subsequently accommodate to decreased inflow by development of collateral circulation. When actual pressures are recorded, however, there is considerable doubt in our mind and in the minds of others as to the actual effect of partial ligation. And it may be that its only effect is to give more time for collateral circulation to become more efficient. If we can count on a "safe" interval of delay, Dr. Lyerly's plan of attack on the neck first followed later by intracranial ligation has much to recommend it. We, unfortunately, have had the unhappy experience of having a patient develop a second acute hemorrhage while under observation for the first one, and have, therefore, felt that there may be considerable risk in deferring craniotomy.

So far as the handling of the patient goes during the first day or two after hemorrhage, we agree with Dr. Lyerly's precautions. We do not, however, feel that repeated spinal puncture is desirable except in isolated instances.

I should like to say something about angiography. We have not yet an ideal radiopaque substance. Thorium dioxide is non-irritating, but as Dr. Lyerly has mentioned, it accumulates in the liver and the spleen. Just how harmful this may be is open to considerable question. Dr. Levy and I have a patient who has been followed for ten years since a carotid arteriogram was done with thorotrast.[9] Admittedly, repeated roentgenograms have revealed opaque material in the liver, but this patient has not had any demonstrable clinical ill effects.

Iodopyracet is used by most of us, but it is not an entirely harmless agent. Skin and conjunctival sensitivity tests in our experience have not given adequate warning of possible complications. Although these complications are not common, we must be aware of them. Of 162 carotid angiograms with iodopyracet, our first 90 cases had no untoward incidents. Subsequently, we have had nine significant complications. Four patients developed

hemiplegia; three of these cleared up promptly, but the fourth remained hemiparetic. There have been two deaths, both of them infants, one with hydranencephaly, and the other hemiatrophy, and perhaps these cannot be directly ascribable to the angiogram. We have had two cases with temporary respiratory arrest. One patient developed a central scotoma in the eye on the injected side. Whether such reactions can be diminished or eliminated by sympathetic block or intra-arterial injection of papaverine is open to question. My personal feeling about the sympathetic block is that it helps the surgeon more than the patient. I mention these reactions, not with any idea of advising against angiography, but merely to point out that they do occur, and to hope that we can find a completely safe substance. Certainly, as noted by Dr. Lyerly, the high mortality of so-called spontaneous subarachnoid hemorrhage is so appalling, that any small risk is justified in attempting accurately to localize the lesion so that it may be attacked surgically.

Dr. R. Eustace Semmes, Memphis, Tenn.—I agree with Dr. Lyerly that the high mortality in spontaneous subarachnoid hemorrhage makes treatment urgent. Too many of these patients have died of continuing or recurrent bleeding while we delayed ligation or even arteriograms during the acute phase.

Now, we proceed at once with ligation in the neck if the involved artery is obvious from the clinical picture, or do an arteriogram if the source of the bleeding is doubtful, and if lumbar puncture indicates that bleeding has stopped.

In a recent follow-up of our cases by Dr. Murphy it was found, to our surprise, that of the 45 cases in which ligation of the artery in the neck or their occlusion by a broad metal band alone was done, there were only five deaths. There were also only seven patients who developed hemiplegia, and all but two of these improved to a point allowing reasonable activity, and altogether only five had subsequent bleeding. With the exception of the five who died in the hospital, all were alive and we were able to trace them.

This series may be unusually fortunate, but we think that it is worth while to continue this relatively safe procedure in the majority of cases. The late hemiplegias (after four or five hours) are evidently due to thrombosis, and not to an inadequate circle of Willis. The factors which favor thrombosis, namely, injury to the intima and low blood pressure stasis, should be avoided by the use of carefully applied broad metal clips, rather than ligatures in occluding the vessels, and by the use of local anesthesia and supporting the blood pressure.

Dr. Lyerly (closing).—Dr. Schwartz mentioned the fact that thorium dioxide has been used on numerous occasions. Previous to five years ago it was used exclusively by me. I have never seen any harm come from it. I have not followed the cases by x-ray studies to determine whether or not it has accumulated to any extent in the spleen and liver, but judging from the literature, it does accumulate in these organs. For that reason, there is a potential danger in its use. I am now using iodopyracet which has shown no apparent toxic effects. Dr. Schwartz has said that it may be dangerous in some cases. The few cases that I have seen in which it was used have had some convulsive twitchings when local anesthesia was used. Since using a general anesthetic, I have not seen any convulsive twitching nor has there been a case of paralysis. I usually inject procaine around the sheath of the carotid artery, even though the patient is under general anesthesia, hoping to prevent arterial spasm locally and along the arterial tree.

The tantalum clamp is an ideal method to occlude the artery. I am not sure that it is sufficient. Even though I use the clamp, I usually apply a ligature above or below without tying it tightly so as not to damage the intima. Following a single ligation, a large artery does not stay occluded; it may re-establish its lumen in a short time. For that reason, I feel that we should do a double ligation, although a broad metallic clamp may occlude the artery permanently. It is important that the intima of the artery not be traumatized, since this may lead to an ascending thrombosis and possible hemiplegia. The application of the tantalum plate is easier on the surgeon than making a double ligature of the artery, and I believe it is less liable to cause ascending thrombosis.

PRIMARY BREECH PRESENTATION AND EXTERNAL CEPHALIC VERSION*

THE MANAGEMENT OF 308 PRIMARY BREECH PRESENTATIONS

By ISADORE A. SIEGEL, A.B., M.D.
and
HUGH B. MCNALLY, B.S., M.D.
Baltimore, Maryland

In 1939 we published our results in the treatment of breech presentations in clinic patients, with special emphasis on the use of external cephalic version. Feeling that our results warranted a continuation of this type of management of breech presentation we continued to employ external cephalic version in our private practice. We are now reporting our experience in approximately 5,500 private patients, in whom 308 had primary single breech presentations and in these 308 breech presentations, 166 successful external cephalic versions were performed.

Etiology.—It is common knowledge that the incidence of breech presentations is high in the early months of gestation, but by the thirty-second week the number is reduced by spontaneous cephalic version. Vartan[1] found 1,000 breech presentations occurring during pregnancy in 3,875 patients giving an incidence of 29 per cent, but 60 per cent of these spontaneously

*Read in Section on Obstetrics, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

*From the Department of Obstetrics, University of Maryland School of Medicine, Baltimore, Maryland.

became cephalic before delivery. Ryder,[2] in a study of 1,700 women, found a total incidence of 15.3 per cent breeches during pregnancy. In our series of approximately 5,500 patients our total incidence was 5.6 per cent. Vartan considers breech presentation a normal phenomenon during the early months of pregnancy. However, he does not believe that the principle factors for persistent breech presentation can be explained by (1) accommodation of fetus to the uterus, (2) accommodation of fetus to the pelvis, or (3) the theory of gravity. Vartan, Stabler[3] and Stein[4] believe that deflexed attitudes or decrease in amniotic fluid are the principle factors for persistent breech presentations. Further, Vartan feels that contracted pelvis, premature fetus, monstrosities, multiparity, placenta previa and tumors blocking the pelvis play a minor role in the production of breech presentation since they are present in only a small percentage of cases. Stevenson[5] recently showed by placentography that cornualfundal implantation of the placenta was an important etiologic factor in single breech presentations. This finding by Stevenson may also be interpreted that the fetus is unable to overcome the obstruction of the placenta in its effort to turn (*Chart 1* and *Table 1*). All this may well mean that deflexed attitudes, especially frank breech; and anything which decreases the available room in the uterus, such as a decrease in the amniotic fluid and cornual-fundal implantation of placenta, may prevent the force of fetal movements to spin the fetus around. This turning may be in two directions (1) as cephalic and (2) as podalic which does occur spontaneously. Stabler gives a clear explanation of how fetal movements accomplish this turning (*Chart 2*).

ETIOLOGY OF BREECH PRESENTATION

Accommodation of the fetus to the pelvis
Accommodation of the fetus to the uterus
Gravity theory
Vartan, Stein, Stabler—Deflexed attitude and decrease in amniotic fluid
Stevenson—Fundal-cornual implantation of placenta
Siegel and McNally—

Contracted pelvis	5.1 per cent
Premature fetus	3.5 per cent
Monstrosity	0.65 per cent
Placenta previa	0.0 per cent
Tumors blocking pelvis	0.65 per cent

Chart 1

INCIDENCE OF FRANK BREECH PRESENTATION

Author	Per Cent
Vartan	60.
Moore and Steptoe	
(Weight of fetus under 2,500 grams)	48.16
(Weight of fetus over 2,500 grams)	63.16
Siegel and McNally	61.11

Table 1

PRIMARY BREECH DELIVERIES

In our study we have included only those primary breech presentations which occur in single pregnancies. Thus we have had 98 primary single breech presentations at time of delivery resulting in an incidence of 1.78 per cent. This low incidence is the result of practicing external cephalic version during pregnancy. In *Table 2* we give the incidence of breech presentations at time of delivery, as reported by those who have not employed external cephalic version. Their incidence varies between 2.8 and 6.7 per cent.

In *Table 3* we show that in our group of 98 breech deliveries 59 were primigravidae and 39 multigravidae; 91 (92.3 per cent) were delivered as term and 7 (7.7 per cent) as premature infants. In only 9 cases was labor prolonged beyond 25 hours. Contracted pelves in primigravidae were present in 10 cases. There were no maternal deaths and a gross fetal mortality of 7.7 per cent.

MECHANISM OF SPONTANEOUS VERSION[3]

(1) Fetal leg movements tend to turn the fetus end for end.

(2) The narrow lower pole of the uterus together with the presence of the pelvic brim makes fetal turning easy of achievement if the legs are flexed with the breech lowermost.

(3) The wide, soft, upper pole of the uterus makes turning difficult of achievement if the legs are flexed with the breech uppermost.

(4) As a result most fetuses present by the vertex.

(5) If the legs are extended the mechanism is reversed and breech presentation is most likely.

Chart 2

PRIMARY BREECH PRESENTATION INCIDENCE

Author	Year	Per Cent
Hausen[13]	1941	6.7
Moore and Steptoe	1943	2.8
Myer[14]	1948	3.1
Potter *et alii*[15]	1945	3.2
Seely[16]	1949	4.8
Siegel and McNally	1939	5.43
Trites[17]	1948	3.8
Trubkowitch and Archangelsky	1944	3.2
Ware[18] (Private Practice)	1947	4.49
Waters[19]	1942	4.3
Chicago Maternity Center		3.24
Chicago Lying In Hospital		4.2

Table 2

Method of Delivery.—It has been our practice to be conservative in the management of breech presentations during labor permitting the patient to bring the breech over the perineum and then to proceed with completion of the delivery, preferring to employ forceps to the after-coming head, under gas-oxygen-ether anesthesia. Some form of analgesia is usually employed during labor except in premature babies. We have hesitated to employ saddle block or caudal anesthesia in these cases, since this reduces the expulsive forces of the mother during the second stage of labor, and should it be necessary to bring down an extended arm or flex the head the contracting uterus would interfere with these procedures. In *Table 4* we give a summary of our methods of delivery in these 98 breeches. It is interesting to note that 17 of these patients were delivered by cesarean section, and 10 of these sections were done for contracted pelvis in primigravidae. This latter fact is important as we shall point out later in this paper.

Fetal Injuries.—In our hands, non-fatal fetal injuries in breech deliveries are quite high. In *Table 5* we give the types of injuries with an incidence of 13.26 per cent. However all these babies made uneventful recoveries.

Fetal Mortality.—In the literature fetal mortality is considered to be high in breech deliveries as shown in *Table 6*. In most instances fetal mortality is corrected for prematurity, monstrosity and complications not associated with the delivery. Thus the gross fetal mortality varies between 5.5 to 35.3 per cent and the net fetal

PRIMARY BREECH DELIVERIES
98 Cases

Para 0	59	
Para 1	39	
Premature	7	(7.7 per cent)
Term	91	
Contracted pelvis	10	
Prolonged labor	9	
Fetal mortality	7	(7.7 per cent gross)
Maternal mortality	0	

Table 3

PRIMARY BREECH DELIVERIES
98 Cases

Methods of delivery	
M. S. V. maneuver	16
Breech ext.	63
Forceps	59
Decomposed	5
C. section	17
Cesarean sections	
Contracted pelves	10
Primigravida	10
Elderly	3
Repeat section for contracted pelves	4
Cervical dystocia	1
Tumors in pelves	2
Double uterus	1
Previous C. section	3

Table 4

PRIMARY BREECH DELIVERIES
98 Cases

Fetal injuries		
Brachial palsy	4	13.26 per cent
Fractured clavicle	3	
Fractured femur	4	
Depressed parietal bone	1	
Epiphyseal sep. of rt. tibia	1	

Table 5

PRIMARY BREECH PRESENTATION
FETAL MORTALITY

Authors	Year	Gross Per Cent	Net Per Cent
Bourne[20]	1931	Primip.	11.0
		Multip.	8.0
Dieckmann[21]	1946	7.7	4.2
Guyer and Heaton[22]	1946		4.5
Hausen	1941	11.9	0.8
Moore and Steptoe	1943	Term-Primips.-White	6.94
		Colored	17.73
		Multips.-White	5.86
		Colored	9.76
Myer	1942	13 per cent	4.7
Potter *et alii*	1945		9.6
Rosenfeld[23]	1940	7.76	3.8
Seely	1949	11.5 to 35.3	6.7 to 9.9
Siegel and McNally	1939	28.1	12.1
Siegel and McNally	1950	(Private) 7.7	0.0
Tompkins	1943	(17 Board Members)	2.7
Trites	1948	5.5	1.8
Trubkowitch	1944		10.1
Ware	1947	5.49	2.2
Waters	1942	Premature	46.7
		Mature	11.2

Table 6

PRIMARY BREECH DELIVERIES
FETAL MORTALITY 7 (7.7 PER CENT)

Weeks	Cause of Death
33	Anencephalic monster
34	Lived 54 hours, atelectasis, prematurity
36	Lived 3 days, atelectasis, prematurity I. C. hem.
28	Stillborn
36	Lived 4 hours, postnatal aspiration, prematurity
40	Hydrocephalus, cleft palate, spinabifida
40	Active maternal and fetal syphilis

Table 7

mortality between 9.8 to 12.1. One of the most interesting observations is that made by Tompkins[6] who reported a net fetal mortality of 2.7 per cent for 17 skilled obstetricians, all of whom were board diplomates. In our series of 98 cases we have had a gross fetal mortality of 7.7 per cent (and a net rate of zero per cent). The causes of fetal deaths are listed in *Table 7*. It is, therefore, justly recognized that even in skilled hands the risk to the fetus is considerable in breech deliveries.

Prolapsed Cord.—One of the principle accidents in breech presentations is the prolapse of the cord. In *Table 8* are listed the incidence of this complication as reported in the recent literature and it varies between 1.8 and 5.1 per cent. The incidence of prolapsed cord in the general obstetrical populations (as reported by Caldwell and Studdiford,[7] Moore and Steptoe,[8] and Trubkowitch and Archangelsky[9] lies between 0.4 and 0.5 per cent. Thus it is apparent that the risk of prolapsed cord in breech presentations is considerable. In our present series we have been most fortunate in that we had not a single case.

External Cephalic Version.—The employment of external cephalic version in the management of breech presentations during pregnancy appealed to us as being a method by which we immediately convert the risks of a breech to that of a cephalic delivery. In *Table 9* we list a few of the men who have shown a decrease in the incidence of breech presentations when they, too, employed external cephalic version. Thus Newell[10] reports a reduction in the incidence of breech presentations by 38 per cent; Bartholomew[11] by 80 per cent; Ryder from 15.3 to 2.6 per cent; and Siegel and McNally[12] from 5.4 to 3.78 per cent and in our present series of 1.78 per cent. These figures are a definite improvement in the incidence of breech presentations as shown in *Table 2*.

That external cephalic version can be done in a high percentage of cases is shown in *Table 10*. Ryder recommends the performing of external cephalic version as early as the twenty-sixth week of gestation. Others after the thirty-second week. (Newell; and Siegel and McNally prefer doing cephalic version from the thirty-second week of pregnancy. Vartan believes, since 60 per cent of the cases will turn spontaneously before the thirty-second week, the external cephalic version should be done after that time). In *Table 11* we give a summary of results obtained in the 166 cases of successful version in our series. The greatest number of versions were done after the

PRIMARY BREECH PRESENTATION
Prolapsed Cord Incidence

Authors	Year		Per Cent
Guyer and Heaton	1946		5.1
Moore and Steptoe	1943		4.85
Seely	1947	(0.9 to 11.9 in literature)	
		In 5,822 collected cases	2.9
		In 984 personal cases	3.2
Siegel and McNally	1950		0.0
Trubkowitch	1944		2.1
Ware	1947	(Private cases)	3.44
Waters	1942		1.8

Table 8

EXTERNAL CEPHALIC VERSION
Incidence of Breech

Authors	Year		
Bartholomew	1927	Reduced by 80 per cent	
Newell	1941	From 3.75 to 2.33 per cent (reduced by 38 per cent)	
Ryder	1943	During pregnancy 15.3	per cent
		At delivery 2.6	per cent
Siegel and McNally	1939	From 5.43 to 3.78 per cent	
Siegel and McNally	1950	(Private) to 1.78 per cent	

Table 9

SUCCESSFUL EXTERNAL CEPHALIC VERSION

Authors	Year			
Newell	1941	72	per cent	
Ryder	1943	92.1	per cent	
Siegel and McNally	1939	85	per cent	Multiparae
		71	per cent	Primiparae
Siegel and McNally	1950	77.9	per cent	(Private)
Studdiford[24]	1932	86	per cent	
Thornhill[25]	1939	84.5	per cent	

Table 10

SUCCESSFUL EXTERNAL CEPHALIC VERSION
(77.9 PER CENT)

Primigravida	65
Multigravida	101
Total	166
R. O. A.	55
L. O. A.	76
R. O. T.	13
L. O. T.	12
R. O. P.	4
L. O. P.	6

Duration of Pregnancy at Time of Successful Version

Weeks	28	30	32	34	36	38	40
Cases	5	13	14	48	72	25	4
Total	32			Total	149		

Table 11

thirty-second week of pregnancy. Further, the resultant presentations were mostly normal. In this group there were 65 primigravidae and 101 multigravidae.

The methods of delivering these patients is shown in *Table 12*. In this series 162 were delivered at term and 4 were premature. All fetuses survived. There were 140 prophylactic low forceps; 8 mid-forceps and one Norton's extraperitoneal section in a case of contracted pelvis after a test of labor. In 13 cases labor was prolonged beyond 25 hours. There were 8 contracted pelves in primigravidae and all were given trial labors resulting in 7 vaginal deliveries and one section as noted above. This is in contrast with 98 breech deliveries where there were 10 contracted pelves in primigravidae and all were electively delivered by cesarean section. This illustrates the advantage of a successful version in contracted pelves, since it allows better clinical and roentgenologic evaluation of the size of the fetus and pelvis, as well as the safety of permitting a trial labor; (thus many of these patients might have been spared the need for a section).

To accomplish these 166 successful versions, as shown in *Table 13,* it was necessary to perform a single version in 145 cases; two versions in 12 cases; three in five cases; four in six cases and five in one case. There were no accidents associated with these versions.

Fetal Mortality.—To justify further the performance of external cephalic version in the management of a breech presentation one must be able to show a significant reduction in fetal mortality. *Table 14* shows the marked reduction of fetal mortality by this procedure over breech deliveries.

Prolapsed Cord.—In *Table 15* we list the incidence of prolapsed cord in (1) breech presentations; (2) in the general obstetrical population and (3) following external version. Here one can see clearly that the accident of prolapsed cord is high in podalic presentations but within normal limits following external cephalic versions.

Premature Labor and Premature Rupture of Membranes.—One of the many reasons given by some obstetricians for not practicing external versions in the management of breech presentations is that it may stimulate premature labor or cause premature rupture of membranes. In *Table 16* we are able to show that neither one of these conditions is increased by external versions.

Bleeding.—Bleeding or premature separation of the placenta resulting from external version is

SUCCESSFUL EXTERNAL CEPHALIC VERSION
(77.9 PER CENT)

Number	166
Delivered premature	4
Delivered term	162
F. M.	0
Delivered spontaneous	17
Delivered low forceps	140
Delivered mid forceps	8
Delivered Norton's C. S. (contracted pelvis)	1
Prolonged labor	13
Contracted pelvis	8

Table 12

SUCCESSFUL EXTERNAL CEPHALIC VERSION
(77.9 PER CENT)

Versions necessary	
One	145
Two	12
Three	5
Four	6
Five	1
Accidents none	
No premature rupture of membrane	
No premature labor attributable to version	
No bleeding	
No premature separation of placenta	
No compound presentations	
No prolapse cord	
No maternal mortality	

Table 13

EXTERNAL CEPHALIC VERSION
Fetal Mortality

Authors	Gross	Net
Newell	4.03	2.9
Ryder	3.1	1.1
Siegel and McNally, 1939	per cent	1.8
Siegel and McNally, 1950 (private)		0.0
Thornhill	2.0	1.0

Table 14

PROLAPSED CORD
Primary Breech Presentation

Prolapsed cord incidence	1.8 to 5.1 per cent
Usual incidence in all presentation	Per cent
Caldwell and Studdiford	0.5
Moore and Steptoe	0.5
Trubkowitch, *et alii*	0.4
Incidence in external cephalic version	
Thornhill, 1949	0.66
Trubkowitch *et alii*, 1944	0.44
Siegel and McNally, 1939	1.9
Siegel and McNally, 1950 (private practice)	0.0

Table 15

feared by some writers. This accident may occur occasionally, particularly when the version is attempted under anesthesia with the employment of rather vigorous and forceful manipulations. Newell and Ryder have employed anesthesia for this purpose but have been careful to use gentle manipulations, and their results have been good. We have not employed anesthesia in any of our cases and warn against its use, since under it one is more apt to employ too vigorous manipulations to accomplish a successful result. In our series we have not had a single case of bleeding following external version.

Cord About The Neck of The Fetus.—Here again some fear that the performance of external version will increase the incidence of producing the twisting of the cord about the baby's neck. In *Table 17* we list the experience of Ryder, and Trubkowitch *et alii* in this matter. It appears that this fear is not well founded. We have not made similar observations in our own series, but at the same time, we have not been impressed by any increase in its occurrence following external version. Certainly if it has occurred there has been no fetal death as a result of it.

Results in Unsuccessful Versions.—We were interested in knowing what happened in 71 cases in which versions were unsuccessful. In *Table 18* we summarize our findings. It is interesting to note that in 42 cases versions were attempted after the thirty-second week of gestation; in 45 cases (64.89 per cent) the presentation was frank breech; in 7 cases the pelvis was contracted and six of these were delivered by elective cesarean section. There were three babies with temporary brachial palsy and two babies with fracture of the clavicle. There was a fetal death due to prematurity. In this same group, 21 cases eventually turned spontaneously to cephalic presentations. Vartan and others, and we concur in this idea, believe that the mere attempt at version may sufficiently dislodge the breech and stimulate increase of fetal movements to make it possible for the fetus to spin itself around.

Observations on Fetal Movements During Pregnancy.—We have observed fetal changes during pregnancy in 137 cases of either cephalic or podalic presentation. It is well known that the fetus does change its position in the uterus from time to time. The most constant change is either from podalic to cephalic and less commonly from cephalic to podalic. Thus Vartan found that 60 per cent of the podalic presentations become cephalic and 13.45 per cent of his cephalic cases became podalic. In our series of 137 cases, 58 cases (42 per cent) became cephalic from podalic and 79 (58 per cent) became podalic from cephalic (*Table 19*). These observations impressed us with the fact that fetal movements play a very important part in the mechanics which ultimately determine the type of presentation.

EXTERNAL CEPHALIC VERSION
Premature Labor

Authors		
Thornhill	After version	0
Trubkowitch	1944—In general OB population	7.4
	After version	per cent 1.0
Siegel and McNally	In breech	5.4
	After version	per cent 2.4
Premature Rupture of Membranes		
Trubkowitch	In general population	5 per cent
	After version	2 per cent
Siegel and McNally	After version	0 per cent

Table 16

EXTERNAL CEPHALIC VERSION
Cord About The Neck

Authors		
Ryder	1943	1 to 3 after 1 version
		1 to 4 with no version
		No increase with repeated versions
Trubkowitch	In general population	16.8 per cent
	After 228 versions	5.2 per cent

Table 17

UNSUCCESSFUL VERSIONS

Attempts at Versions	One	Two	Three	Four	Five
Cases	57	8	2	2	2
Primigravida					34
Multigravida					37
Delivered at term					70
Delivered premature					1
Premature fetal mortality					1
Frank breech				(64.89 per cent)	45
Contracted pelvis					7
C. S. (because of contracted pelves)					6

Duration of Pregnancy When Version Was Attempted

Weeks	28	30	32	34	36	38	40
Cases	2	6	4	18	21	11	3
Total	12						42
Brachial palsy							3
Fractured clavicle							2

Spontaneous Version Following Failure

Weeks	30	32	34	36	38
Cases	1	3	2	9	6
Total cases					21

Table 18

DISCUSSION

From our study of the subject of breech presentations we believe that the theory of (1) accommodation of the fetus to the uterus; (2) accommodation of the fetus to the pelvis; and (3) the change in the center of gravity of the fetus are not tenable as etiologic factors and that such factors as contracted pelvis, premature fetus, monstrosities, placenta previa, and tumors blocking the pelvis are only incidental causes of breech presentation. It appears to us that the determining factor is the ability of the fetus, by its movements, to spin itself around mechanically. Thus deflexed attitudes, as in the case of frank breech, would decrease the force of fetal movements to produce a turning motion. Further decrease in amniotic fluid with closer application of the uterus to the fetus might offer too great a resistance for fetal movements to overcome. Stevenson's finding of cornual-fundal implantation of the placenta in single breech presentations may not be a matter of accommodation but rather the inability of the fetal movements to overcome this obstruction within the uterus. The fact that many babies will turn spontaneously after unsuccessful attempts at external cephalic version helps to substantiate the idea that temporarily changing the relation of the fetus within the uterus may be sufficient to permit the fetal movement to turn the fetus.

It is also apparent that the management of the breech from the point of view of delivery, even in the hands of the skillful, carries with it a fetal mortality which is comparatively too high. The accidents associated with podalic presentations and the injuries sustained by the fetus during delivery are important factors in this fetal mortality and cannot easily be prevented. We do believe that the application of forceps to the after-coming head is a valuable procedure in preventing some fetal injuries. It is our feeling that in every case of persistent breech presentation there should be a careful evaluation of the size of the fetus, the type and size of the pelvis both clinically and roentgenologically. If the pelvis is adequate, then vaginal delivery should be permitted. Should the pelvis be inadequate, then cesarean section should be employed, since there cannot be such a thing as trial labor in a breech.

OBSERVATION ON FETAL MOVEMENTS DURING PREGNANCY	
Spontaneous cephalic version	58 cases
Spontaneous podalic version	79 cases
Total	137

Table 19

In the management of breech presentations during pregnancy, it is our feeling that external cephalic version should become an important procedure in prenatal care. Its proper employment carries with it no undue risk but does eliminate all the accidents that are more frequently associated with podalic presentations. Successful version immediately reduces the fetal mortality to that of cephalic deliveries. Further, a successful external version eliminates unnecessary cesarean sections, since a more accurate evaluation of the relationship of the head to the pelvis can be made, and when in doubt a trial labor can be permitted without risk to mother and baby.

The best time to perform an external cephalic version during pregnancy in our opinion is not necessarily a fixed one. Just because 60 per cent of podalic presentations will spontaneously convert themselves to cephalic by the thirty-second week of gestation does not in itself indicate that versions should be done only after the thirty-second week. It is conceivable that as the fetus becomes larger, and with the high incidence of frank breech presentation, external version may become more difficult if not impossible. It may very well be that the very high degree of success obtained by Ryder is due to the fact that he attempts to turn babies as early as the twenty-sixth week of gestation. It is our feeling that one should attempt external version as soon as a definite diagnosis is made, which usually is not before the twenty-sixth week, and that repeated attempts should be made throughout pregnancy regardless of the duration of gestation, always employing gentle manipulations with the patient awake.

SUMMARY

(1) A study of 308 primary breech presentations is presented.

(2) Etiologic factors responsible for persistent breech presentations have been discussed.

(3) Evidence has been presented to indicate that breech deliveries are fraught with a high fetal mortality even in expert hands.

(4) A careful evaluation should be made of the size of the fetus, and the shape and size of the pelvis in each case of persistent breech presentation before permitting the patient to be delivered vaginally.

(5) Where the fetus is large or the pelvis contracted in the case of persistent breech presentation, cesarean section is justifiable.

(6) External cephalic version is a valuable procedure in the management of breech presentation.

(7) External cephalic version definitely reduces fetal mortality without introducing any serious hazards.

(8) Successful external cephalic version will reduce the need for cesarean section in cases of borderline or contracted pelvis.

BIBLIOGRAPHY

1. Vartan, C. K.: Cause of Breech Presentation. Lancet, p. 595 (March 30) 1940. Idem.: The Behavior of the Foetus in Utero with Special Reference to the Incidence of Breech Presentation at Term. J. Obst. and Gynec. Brit. Emp., **52**:417, 1945.
2. Ryder, G. H.: Breech Presentations Treated by Cephalic Version in the Consecutive Deliveries of 1,700 Women. Amer. J. Obst. and Gynec., **45**:1004, 1943.
3. Stabler, F.: The Cause of Polar Lie. J. Obst. and Gynec. Brit. Emp., **54**:345, 1947.
4. Stein, I.: Deflection Attitudes in Breech Presentation. J.A.M.A., **117**:1430, 1941.
5. Stevenson, C. S.: The Principle Cause of Breech Presentation in Single Term Pregnancies. Am. J. Obst. and Gynec., **60**: 41, 1950.
6. Tompkins, P.: The Intrinsic Risk of Breech Delivery. Am. J. Obst. and Gynec., **46**:695, 1943. Idem.: An Inquiry into the Causes of Breech Presentation, Am. J. Obst. and Gynec., **51**:595, 1946.
7. Caldwell, W. E.; and Studdiford, W. E.: A Review of Breech Deliveries During a Five Year Period at the Sloane Hospital for Women. Am. J. Obst. and Gynec., **18**:623, 1929.
8. Moore, W. T.; and Steptoe, P. P.: The Experience of the Johns Hopkins Hospital with Breech Presentation. South. Med. J., **36**:295, 1943.
9. Trubkowitch, M. V.; and Archangelsky, B. A.: Brit. Med. J., p. 220 (Feb. 12) 1944.
10. Newell, J. L.: Prophylactic External Cephalic Version. Am. J. Obst. and Gynec., **42**:256, 1941.
11. Bartholomew, R. A.: Prophylactic External Version. Amer. J. Obst. and Gynec., **14**:648, 1927.
12. Siegel, I. A.; and McNally, H. B.: Breech Presentations and Prophylactic External Cephalic Version. Amer. J. Obst. and Gynec., **37**:86, 1939.
13. Hausen, E. M.: Breech Delivery. Amer. J. Obst. and Gynec., **41**:575, 1941.
14. Myer, H.: Breech Presentation and Delivery. Am. J. Obst. and Gynec., **56**:375, 1948.
15. Potter, M. J.; Erving, H. W.; and Brown, J. B.: Observations on Breech Deliveries in a General Hospital. Amer. J. Obst. and Gynec., **49**:567, 1945.
16. Seely, W. F.: Fetal Mortality in Breech Deliveries. Am. J. Obst. and Gynec., **57**:113, 1949.
17. Trites, A. E.: A Study of Breech Delivery. Amer. J. Obst. and Gynec., **55**:430, 1948.
18. Ware, H. H.; Winn, W. C.; and Schelin, E. C.: Management of Breech Presentation. Amer. J. Obst. and Gynec., **54**:748, 1947.
19. Waters, E. G.: Primary Breech Birth. Amer. J. Obst. and Gynec., **43**:715, 1942.
20. Bourne, A.: The Management of Breech Labour. Brit. Med. J., **2**:372, August 28, 1931.
21. Dieckmann, W. J.: Fetal Mortality in Breech Delivery. Am. J. Obst. and Gynec., **52**:349, 1946.
22. Guyer, G. H.; and Heaton, C. E.: The Fetal Risk in Breech Delivery. Amer. J. Obst. and Gynec., **52**:362, 1946.
23. Rosenfeld, S. S.: Management of Breech Position. Am. J. of Surg., **48**:420, 1940.
24. Studdiford, W. E.: Breech Presentations and Their Delivery. J.A.M.A., **99**:1820, 1932.
25. Thornhill, P. E.: Observations in Behavior of Presentations and Results with External Version in 190 Breech Cases. Am. J. Obst. and Gynec., **57**:1000, 1949.

DISCUSSION (*Abstract*)

Dr. Leo J. Hartnett, St. Louis, Mo.—It is my belief that external version is widely practiced among obstetricians. Many, I am sure, have their own indications as to when, and how, and under what circumstances it should be attempted. Most writers on the subject show excellent results and appear enthusiastic concerning its value. It has been rather disappointing, however, that no definite group of contraindications has been clearly outlined.

In our own practice the following conditions are observed before external version is attempted: (1) The breech must not be fixed in the pelvis or engaged, although most authors on this subject recommend disengagements. (2) Uterine irritability, if present, is considered a contraindication to manipulation, and this can be determined at the time ordinary maneuvers are employed for diagnosis of presentation. (3) A sufficient amount of amniotic fluid should be present to allow completion of the maneuver with gentle manipulation. (4) It should be determined by examination that the cervix is closed in order to decrease the possibility of causing spontaneous rupture of the membranes. (5) There should be no history of previous hysterotomy.

It has been my experience that external version can be accomplished with greater ease in multiparous individuals and it is with these cases that difficulty with breech deliveries is least often encountered. Primiparous individuals require a thorough study of the pelvis and if any doubt exists as to the adequate pelvic measurements after digital examination, x-ray pelvimetry should be employed before labor if possible. It is gratifying to note that Drs. Siegel and McNally employed x-ray pelvimetry liberally and it appears they were rewarded. When external version is attempted in a primiparous individual and the breech presentation is spontaneously restored it would serve to arouse one's suspicions as to the adequacy of pelvic measurements. The statement that there is "no such thing as a trial of labor in breech deliveries" cannot be over emphasized.

The authors' method in the conduct of labor and delivery in breech presentations is to be complimented, and their results are arguments in themselves against the necessity for external version.

Such dangers as twisting of the cord about the fetus, or separation of the placenta, seem to be overemphasized in the general concept of this procedure and I believe in the hands of competent obstetricians this maneuver may be considered inocuous. It may be attended with considerable danger if attempted by unskilled hands, and therefore should be recommended and taught with caution.

Dr. W. D. Beacham, New Orleans, La.—The purpose of external version is to substitute a cephalic for a less favorable presentation. In instances of transverse lie of the fetus the general concensus of opinion is that the procedure is definitely indicated, but as to its routine performance in cases of breech presentation there is considerable discussion pro and con. As pointed out by Drs. Siegel and McNally, one must not resort to forceful manipulations in attempting to convert a breech presentation into a cephalic one, and we note that they warn against the use of anesthesia. Obviously if the uterine wall is hyperirritable or the quantity of amniotic fluid is insufficient, external version should not be attempted.

It will be noticed that of the 166 successful versions, 149 were performed during or after the thirty-fourth week of gestation. Furthermore, 145 cases required only one version while 12 cases required two and a similar number three to five. Had the essayist had sufficient time he would have told us more concerning the unsuccessful versions. One might ask why only one attempt at conversion was made in 57 of the 71 cases in that group. The 21 cases of spontaneous version following failure of the external maneuver constitute an interesting category. We wholeheartedly agree with the authors' statement that "fetal movements play a very important part in the mechanics which ultimately determine the type of presentation."

It is good to know that the authors have not had any unhappy experiences in their version cases with tight cords around babies' necks, true knots in the cord, or premature separation of the placenta inasmuch as the possibility of such tragedies causes many obstetricians to refrain from the routine practice of attempting external versions in cases of breech presentation. In the management of breech presentations in our private practice we have adhered to a policy of conservatism. Thus far the results have been gratifying.

Dr. Siegel (closing).—We are pleased that Dr. Hartnett raised the question of the contraindications to performing external cephalic version, since we did not discuss these.

We do not believe that a fixed or engaged breech necessarily is a contraindication because with proper care, attention, and with experience one can many times bring the breech out of the pelvis and then perform the external version. We did not discuss the technic of doing external cephalic version. Our method is to have the patient lying in the prone position, with the knees slightly flexed and with the patient breathing through her mouth. Thus she will remain absolutely relaxed. We tell the patient what we are doing and why. We gain her confidence, so that she will not contract her abdominal muscles which would interfere with our manipulations.

Dr. Hartnett's second contraindication was uterine irritability. This may be a contraindication to some physicians but not in our hands. Some authorities get around this condition by giving the patient a small amount of sodium pentothal.® We prefer not to use any anesthetic. We have been successful in a certain number of these cases. It is a painstaking operation. One has to do it slowly. The baby is brought around in a flexed attitude between contractions and during a contraction the fetus is held in position.

The third contraindication raised by Dr. Hartnett was that of insufficient amniotic fluid. We do not know how to determine the amount of amniotic fluid present in a primigravida. In most instances their abdominal muscles and uterus are tight. We attempt our external version, and if we are successful we are so much to the good. If we are unsuccessful we have lost nothing; but we have seen cases where spontaneous version has taken place after such manipulations. Since we have no way of judging when we have or have not sufficient amniotic fluid, we ignore that particular contraindication.

The fourth contraindication raised was that of a dilated cervix. We are not certain that this is a contraindication, because we have even done external version during early labor where there is dilatation of the cervix but with membranes intact. Certainly when the version is done before term there is no need to investigate the condition of the cervix.

We are wholeheartedly in accord with Dr. Hartnett that in any woman who has a scar in the uterus due to a previous cesarsean section or myomectomy, one must never attempt an external version.

Dr. Hartnett raised the question that since breech delivery in multiparae is easy, why do external version? We agree with that idea, but the trouble is that prolapse of the cord is a more frequent accident in these cases. According to Moore and Steptoe, prolapsed cord was found to occur nine times more often in breech presentations than in cephalic presentations. One-fifth of the fetal deaths in over 1,400 cases were due to prolapse of the cord. We ought to do external version to reduce that possibility.

Dr. Beacham pointed out that most of our external versions were done after the thirty-fourth week, which is perfectly true. But if you will recall, we showed in one of our charts that Dr. Ryder was able successfully to turn 91 per cent of his cases because he attempted his versions as early as the twenty-sixth week of pregnancy. We believe there is something to this. As pregnancy advances to 32 weeks or more, the fetus not only increases in size but those that fail to turn spontaneously are more apt to be frank breech presentations. Both these conditions make the performing of external version more difficult. Thus performing external version earlier in pregnancy may result in many more successful cases.

THE GENERAL PRACTITIONER AND FRACTURES OF THE LOWER EXTREMITIES*

By J. Albert Key, M.D.
St. Louis, Missouri

It is often stated that this is an age of specialists, but it is still true that the great majority of doctors of medicine are engaged in general practice and that the great majority of patients are treated by general practitioners. In most instances, in our country at least, this is a matter, not of necessity, but of choice; because with modern transportation facilities a specialist is readily available for consultation or treatment of a given case. The journey rarely lasts more than a few hours and it is rare indeed that this cannot be accomplished without aggravating the condition of the patient, and this is especially true of fractures. It is thus evident that the

---

*Read in Section on General Practice, Southern Medical Association, Forty-Fourth Annual Meeting, St. Louis, Missouri, November 13-16, 1950.

*From the Department of Surgery, Washington University School of Medicine, St. Louis, Missouri.

general practitioner who undertakes the treatment of a fracture assumes the responsibility for the administration of proper care of the condition.

In this paper the term general practitioner is used to denote a doctor of medicine who is in active practice and whose practice is carried on in his office, in a hospital and in the homes of his patients. It is assumed that he has had some surgical training or has developed some surgical ability, and that while the bulk of his practice consists of the care of patients whose illness would come under the heading of general medicine, he does a certain amount of surgery as well as a certain amount of work in all the well recognized specialties of medicine. If he treats fractures he should be moderately proficient in the use of plaster-of-paris and of traction.

It will also be assumed that not only has he access to hospital care for his patients, but that he has available consultations with specialists in various fields and is in a position where he can refer his patients to such specialists if he so chooses. Finally it will be assumed that he is sincerely interested in seeing that his patients get the best available treatment and that he has not an exaggerated opinion of his abilities which will lead him to attempt to treat any condition that presents itself so long as he can obtain the consent of the patient, regardless of whether or not he is qualified to do so.

Having thus laid a basis for the general practitioner and his attitude towards fractures it seems in order that we consider the principle fractures of the lower extremity, note some of the complications which are apt to occur, and express an opinion as to whether or not such fractures should be treated by the general practitioner or whether they should be referred to a specialist.

On this basis we shall first consider fractures of the hip.

These fractures are usually divided into intracapsular and trochanteric fractures. The intracapsular fractures tend not to unite unless they are very expertly treated and even then about 25 per cent of the cases develop aseptic necrosis of the head of the femur. The trochanteric fractures usually unite, but tend to develop a varus deformity unless this is prevented by internal fixation or by traction. With the exception of certain cases in which the head of the femur is firmly impacted on the neck, it is now generally agreed that intracapsular fractures should be operated upon and the head of the femur fixed to the distal fragment with one or more nails or screws. To treat these fractures by the so-called conservative methods of manipulative reduction and immobilization in a large plaster cast or by traction, is to court nonunion and also to increase the mortality over what may be expected from the operative treatment when this is carried out by an expert.

Intertrochanteric fractures are also operated upon in many clinics. However, these can be treated successfully by traction provided the attending physician is well versed in the use of this method. Not only is the prognosis better as regards function, but also the disability is shorter and the mortality is lower in the intertrochanteric fractures if they are successfully operated upon and if the displacement is reduced and the fragments are firmly fixed by a nail or screw with a plate attached. In both types of fractures of the hip the operation is difficult and should not be attempted by one who has not had special training and considerable experience in surgery of the hip. This is because unless the fractures are satisfactorily reduced and the nails or screws placed in approximately the correct position the operation is doomed to failure. In the hands of qualified orthopedic surgeons the operation is not especially dangerous and is rarely accompanied by shock. Consequently old age and debility are not contraindications to the operative treatment of these injuries.

It was thought that the introduction of well-leg traction would eliminate the necessity for surgery in many of these cases. However, it is to be noted that this is not entirely true and well-leg traction gives no better result than do other types of traction when intelligently used. Likewise, well-leg traction is not without danger. We have recently had a patient at the Barnes Hospital who entered with gangrene of the well leg which was caused by the cast and pressure used in the application of well-leg traction for a trochanteric fracture of the femur. We have also seen several cases of peroneal paralysis in patients with fractures of the hip who were treated by well-leg traction. It is thus evident that only a very exceptional general practitioner should attempt to treat fractures of the hip unless these are firmly impacted and even then he should have the opinion of an expert as to whether or not the fracture is amenable to conservative treatment.

Fractures of the Shaft of the Femur.—These are severe injuries which carry considerable danger to life and often result in prolonged or even permanent disability. During recent years there has been a definite shift in the direction of operative treatment of these cases. This has been promoted by the wider use of noncorrosive metals for internal fixation and of antibiotics for the prevention of operative infection, as well as by the increase in the number of surgeons who are especially trained and proficient in orthopedic surgery. We do not yet know what the results of operative treatment are as compared with those of conservative treatment. By operative treatment we mean exposure and open reduction of the fracture and internal fixation either locally with plates or screws or with a long intramedullary nail. By conservative treatment we mean manipulative reduction and immobilization in a plaster cast or treatment by traction in bed.

Open reduction and internal fixation of a fracture of the shaft of the femur are a major surgical procedure and should not be attempted by anyone who has not the proper training or experience. The closed reduction by manipulation of these fractures and the immobilization of the fragments in a plaster cast requires unusual skill and the use of this method is limited to a relatively small group of surgeons. Treatment of these major fractures by traction is certainly the best method for the general practitioner and in adults this should usually be skeletal traction. The traction should be inspected daily and the position of the fragments and the alignment of the limb checked by measurement and by inspection of the extremity and by occasional x-rays in two planes. In adults and older children the limb is supported in or near the horizontal plane in a Thomas or other type of splint. In infants or young children the limb is suspended vertically in the manner usually termed Bryant's traction. Open reduction is rarely necessary in children.

Fractures in the Region of the Knee Joint.—Fractures of the lower end of the femur, especially supracondylar fractures with comminution fall into the same category as fractures of the shaft of the femur. Fracture of a single condyle with displacement almost always requires open reduction and expert care. Fractures of the patella in which the fragments are not displaced or in which a loose piece is broken off and the continuity of the extensor apparatus is not interrupted, can usually be treated conservatively and with some patients one may use only an ace® bandage and crutches. Most patients are more comfortable and the risk of separation of the fragments and nonunion is less if the limb is immobilized in extension in a plaster cast for 4 to 6 weeks.

Fractures of the patella in which the fragments are separated should be operated upon and usually this involves opening the knee joint which is the largest joint in the body and in which infection may be very serious. Consequently, it is recommended that this not be done by the general practitioner unless he is quite sure of his surgical technic.

Fractures of the proximal end of the tibia and fibula vary greatly in severity. For the most part they are fractures in which the external condyle is depressed to a variable degree and while the joint mechanism may be interfered with, in many instances displacement of the fragments is not sufficient to cause great disability even though the displacement is permitted to persist. In cases with relatively slight displacement the fracture may be treated by traction in bed or the limb may be immobilized in a cast and no special skill is necessary in order that a satisfactory result may be obtained. It is warned that immobilization should not be continued over too long a period because this tends to cause prolonged if not permanent decrease in the range of motion in the knee joint. On the other hand weight bearing should not be begun too soon as this may cause increase in the deformity. Those fractures of the proximal end of the tibia in which the semilunar cartilage is involved or in which there appears to be necessity for improvement in the position of the fragments in order that good function of the knee may be expected, demand expert treatment. Open reduction of these fractures or of those of both condyles of the tibia should not be attempted by a general practitioner.

Fractures of the Shaft of the Bones of the Leg.—In many instances these are incomplete or the fragments are not sufficiently displaced to demand much in the way of reduction. In such instances the limb can be immobilized in a cast which extends from the groin to the toes with

the knee slightly flexed and the foot dorsiflexed to 90° for from 8 to 10 weeks or until union is solid. X-rays should be made after the cast is dry in order to check the position of the fragments. Treatment of these fractures falls within the realm of one who is not an expert. On the other hand fractures in which the fragments are markedly displaced, or in which comminution is present, may demand open reduction or treatment by traction. When open reduction is indicated this usually requires internal fixation and this is a procedure which comes within the realm of the specialist. If traction is to be used it has been our experience that skeletal traction applied through the tuberosity of the os calcis or the lower one-fourth of the tibia and combined with a plaster cast which is loosely padded, but which will maintain alignment of the fragments is a very satisfactory method of treating these cases and this can be done by the general practitioner provided he is careful to maintain alignment of the limb and position of the fragments until union occurs. The traction is incorporated in the cast and pulls the distal fragment and the cast down and away from the proximal fragment which slips upward in the cast. A cross board incorporated in the cast may be used to prevent rotation of the distal fragment or the cast may be suspended in a Thomas splint. After union is fairly well advanced the cast and traction wire may be removed and a snug thinly padded plaster cast applied.

In the conservative treatment of fractures of the shaft of the femur or of both bones of the leg, the physician should be on guard against nonunion and if some callus and beginning union is not present at the end of 4 weeks delayed union is impending and he should seek the advise of a specialist in order to decide whether or not surgical intervention is indicated at this time. The condition may be due to muscle interposition between the fragments, to distraction from excessive traction, to extensive comminution and tissue damage, or to some unknown cause. We believe that it is advisable to detect and attempt to correct the condition early rather than to wait until nonunion is evident and thus waste much time and lessen the chance of obtaining a satisfactory result.

Fractures in the Region of the Ankle.—These injuries vary greatly in severity and complexity and the prognosis and method of treatment differ accordingly. The most frequent fracture in this area is one of the lower one-fourth of the fibula or external malleolus in which there is little or no displacement of the fragments, and it may even be difficult to see this fracture in the x-ray. Such fractures require immobilization preferably in a walking plaster cast for from 4 to 6 weeks and do not need any special after care other than protection of the foot from swelling with an elastic bandage after the cast is removed. With more force either in inversion or eversion of the foot the fragments may be displaced and reduction under anesthesia may be necessary. This can usually be accomplished by manipulation with strong inversion of the foot. If the internal malleolus is broken and the loose fragment is separated it can often be approximated by strongly inverting the foot, otherwise, open operation and internal fixation may be necessary if union is to be obtained.

At times the posterior portion of the inferior surface of the tibia is broken off and displaced upward. This varies from a small sliver of bone to as much as one-half or more of the articular surface. If the piece comprises less than one-fourth of the articular surface it may be ignored, but if a larger piece is broken off and displaced upward accurate repositioning is necessary and usually this requires an open reduction and internal fixation.

Any of the fractures of the ankle, and especially those in which there is a fracture of the posterior lip of the articular margin of the tibia, are apt to be complicated by subluxation at the ankle joint. Not infrequently these severe fracture dislocations at the ankle can be reduced with relative ease if they can be manipulated under anesthesia shortly after the accident. On the other hand some of them pose very difficult problems. If the opportunity presents itself the general practitioner should attempt reduction before marked swelling occurs. On the other hand all post-reduction x-rays should be studied carefully and if the position of the fragments is not satisfactory he should seek the advise of a specialist. The things especially to be guarded against are diastasis of the mortise of the ankle, separation of the internal malleolus which leads to nonunion, malalignment of the foot on the leg and failure prop-

erly to seat the astragalus in the mortise of the ankle. After the reduction, the foot and ankle should be immobilized in a plaster cast which extends to the mid-thigh. At the end of from 4 to 6 weeks this can be changed to a walking cast. In severely comminuted fractures of the lower end of the tibia a good result is not to be expected. However, an attempt should be made to obtain a satisfactory reduction before resorting to arthrodesis. It is believed that if any of these fractures requires open reduction or arthrodesis the operation should be performed by a specialist.

Fractures of the Foot.—The most frequent fracture of the tarsal bones is a fracture of the os calcis. These vary greatly in severity and in the amount of disability which is apt to follow the injury. If the fracture is a mild one with little or no displacement all that is necessary is to immobilize the foot and ankle in a plaster cast for from 4 to 8 weeks and then gradually to permit the patient to resume weight-bearing. Such fractures come within the realm of those which may be treated by the general practitioner. On the other hand if the bone is badly comminuted and deformed and the articular surfaces are disorganized, prolonged disability is apt to follow even with the most expert treatment and we believe that the patient should be given the benefit of the most skillful care available.

Fractures of the astragalus are relatively rare and usually the fragments are not displaced sufficiently to interfere with function. In such instances all that is necessary is to immobilize the foot and ankle in a plaster cast until union has occurred. On the other hand, severe fractures of this bone are difficult problems, are apt to be followed by necrosis of the body of the bone and should have expert care. Fractures of the other tarsal bones are usually not important unless they are accompanied by displacement. With fracture dislocations of the tarsal bones open reduction may be necessary. The same is true of fractures of the metatarsals. Those without displacement may be treated by simple immobilization followed by a shoe with a metatarsal bar, while those with marked displacement may demand open reduction and are sometimes followed by long disability. The most common fracture of the toes is a fracture of the proximal phalanx of the fifth toe. This can be treated satisfactorily by placing a little cotton between the fourth and fifth toes and strapping them together and immobilizing the toes with adhesive. Crushing fractures of the other toes are usually not displaced and heal without complications unless they are compounded. All that is necessary is to make the patient comfortable and protect the toe with a splint or plaster cast until he can bear weight without pain.

It is believed that all severe compound fractures should, if possible, be seen by a specialist as soon as possible after the injury and this is especially true of compound fractures of the major bones. Likewise when for any good reason during the treatment, the position of the fragments or the condition of the patient is not satisfactory, it is advisable that a specialist be consulted. This is especially true in cases in which union is for any reason delayed as nonunion of bones usually demands very expert treatment if a satisfactory result is to be obtained.

It is thus evident that the general practitioner should consider the specialist an ever present help in time of trouble rather than an unwelcome poacher upon his preserves and that a cordial relationship should exist between the two groups of physicians. The aid of the specialist should be sought early rather than only after the exigencies of the situation demand that a change be made. Some general practitioners feel that to seek the aid of a specialist is an admission of inferiority or of lack of ability and that their practice will suffer if this is done. It is my observation that our patients do not expect us to be omniscient or omnipotent, but they do expect us to have their best interest at heart, and the most successful general practitioners are those who avail themselves freely of the services of men who limit their work to restricted fields in medicine.

DISCUSSION (*Abstract*)

Dr. Charles R. Rountree, Oklahoma City, Okla.—It has been my observation that the greatest difficulties of the general practitioner and general surgeons in regard to treating certain fractures are mechanical in nature. For example, a fracture of the neck of the femur, although well and adequately reduced, cannot remain in the position for union to occur unless the nail is properly placed within the neck of the femur. Very often we see a patient with good reduction and an excellent x-ray in the anterior-posterior view, in whom the leg apparently has

fallen apart and shortened some days after the operation. When the lateral view of that patient is made, one finds that the nail is completely outside the neck of the femur. This means that a surgeon must have at his disposal all facilities for taking not only anterior-posterior x-rays, but also lateral x-rays at the time of the operation.

We find it extremely disappointing to note that even in large well-equipped modern hospitals, the technicians are not familiar with making lateral views, and the surgeons will nail hips without proper x-ray facilities. The same may be true with intramedullary nails. A surgeon can get into no more difficulty than by using a nail which is too large for the medullary canal or one that is not long enough to traverse the fracture site. There again the question of proper plates and screws comes up. We frequently see fractures properly reduced, and properly operated upon, but the plate is inadequate because of short screws or because of some mechanical difficulty. The plates should always be at least three times as long as the diameter of the bone, and the screw should traverse both cortexes. Many surgeons who like to operate upon fractures are not familiar with their equipment, or at least the equipment is not available at the time they are ready to use it. They go into an operation and need a drill or a bit of a certain size to fit a screw of a certain size, and they have none. Many of the difficulties are mechanical in origin and unless one realizes this and is sure that proper facilities are available, it may be better to refer the patient after all.

In closing, I feel that with increased hospital facilities which are being built all over the country, the specialist is closer to the general practitioner and the general surgeon than he ever has been before. Patients are going to expect, and many times demand, to be treated at home in the new hospital which has just been built, and which has apparently all of the conveniences of the city institutions. That means that we specialists must work more directly and more closely with you who are in general work, and that we must place ourselves at your disposal. Furthermore we must conduct ourselves in such a fashion that when the emergency is over you still have a patient, and you still have a family. There should be no hesitancy on your part in calling upon us for aid, which must be readily, quickly and happily given.

Southern Medical Journal

JOURNAL OF THE

SOUTHERN MEDICAL ASSOCIATION

Copyright, Southern Medical Association, 1951. Material in the Southern Medical Journal, being covered by copyright, may not be reproduced in whole or in part or abstracted without permission from the publisher and then only if due credit is given.

Published monthly by the Southern Medical Association, Empire Building, Birmingham 3, Alabama. Annual subscription, $10.00. Single copies 85c each.

Entered as second-class matter at the Post Office at Birmingham, Alabama, under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized December 20, 1921.

Volume 44 OCTOBER 1951 Number 10

EDITORIAL DEPARTMENT

Editor

M. Y. Dabney, M.D., Birmingham, Alabama

Associate Editors

Curtis J. Lund, M.D., New Orleans, Louisiana

Curtice Rosser, M.D., Dallas, Texas

Tinsley R. Harrison, M.D., Birmingham, Alabama

THE DALLAS MEETING

As this issue of the JOURNAL goes in the mail, only a month remains for physicians of the South to make their plans to attend what promises to be one of the most outstanding medical meetings ever presented.

Commencing Monday, November 5, and continuing through Thursday, November 8, the Southern Medical Association will hold its forty-fifth annual meeting in Dallas, Texas. The twenty-one sections composing the Association will present forty-seven half-day sessions, beginning Monday afternoon, covering every aspect of modern medical practice. The Opening Assembly on Monday forenoon, the scientific and technical exhibits and medical motion pictures will supplement the section sessions to make this meeting one of the most complete general medical meetings possible.

The program for this meeting will be found on pages 973-992 of this issue of the JOURNAL. Note that Wednesday evening is President's Night, the annual dinner meeting with Dr. Curtice Rosser of Dallas giving his President's Address, this followed by an entertainer and then the annual grand ball. Also in this issue on pages 962-971 is an historical sketch of Dallas, including a most interesting medical history and the important part the medical profession has and is playing in the development of this modern metropolis affectionately known by thousands as "Big D."

The Dallas County Medical Society, celebrating its seventy-fifth anniversary this year, is the host society to the Southern Medical Association, and all members are striving to make this meeting even more successful than any of the previous meetings. The local medical profession has expended all possible effort to insure that this meeting in Dallas will be the greatest meeting in the history of the Association.

PSITTACOSIS FROM POULTRY

Paratyphoid is said to be one of the commonest infections of poultry; and the domestic fowl is the chief human source. Psittacosis is thought of as a rare disease of parrots, not often encountered in this country. However, probably not many Americans are immune to it. Most of them are so fortunate as not to be exposed.

Investigators[1] from the State Health Department of Texas report an outbreak of psittacosis among a group of workers in a poultry slaughtering and dressing establishment in southeast central Texas. The infection they believe came entirely from turkeys. It was largely confined to a group of Negro workers who picked pin feathers from the birds during the rush season for turkeys in October. The turkeys were dressed for market without removal of the entrails; and it was believed that the ventral discharge caused the infections. White workers who processed chickens did not contract the disease, which attacked more than half the Negroes on the turkey assembly line. The infected workers developed pneumonitis, abdominal distension, and other symptoms. Most recovered but there were three deaths among twenty-two cases.

The birds were brought in to slaughter from many different farms. They were said to have looked unusually healthy. By the time the outbreak of psittacosis was discovered, it was impossible to tell the source of the infected group, which had perhaps come from just one farm.

One wonders whether some of the retail butchers or the housewives who may have handled the psittacotic birds shipped to other

1. Irons, J. V.; Sullivan, T. D.; and Rowen, Joyce: Outbreak of Psittacosis (Ornithosis) from Working with Turkeys or Chickens. Amer. J. Public Health, 41:931 (Aug.) 1951.

parts of the country could have developed the same disease; and also whether it spread further from the human cases in that area of Texas. Psittacosis would seem to be one of the public health problems to be considered at all times in the handling and marketing of large numbers of fowl.

The rural agricultural life one thinks of as naturally cleanly and farm pursuits as wholesome. The English countryside in the time of Lorna Doone must have been much freer from the majority of contagious diseases of men and animals than are modern farms. It was the cities of olden times which were swept periodically by plagues.

Chickens, turkeys, ducks, and so on carry numerous parasites, from small viruses through the bacteria, protozoa, many kinds of worms, and larger lice which cling outside the bodies. They are susceptible to as many infections as human beings and are capable of few sanitary measures for their own protection.

The population of this country no doubt eats better than it ever has, and this entails slaughter of very large numbers of poultry. Standards of legislation for poultry handling establishments are varying, and good ordinances are lacking in many states. Helvig and Hart[1] of the United States Public Health Service have listed some of the requirements for properly conducted poultry dressing establishments. A suitable building they say is the first requirement, which is easy to clean, is light and well ventilated. Equipment in contact with the poultry must be washed after using and receive "approved bactericidal treatment" before it is used again. There should be adequate toilet and handwashing facilities for workers, proper disposal of wastes, and pest control. This should be attained by building out the pests, by eliminating harborage areas and available food, by use of exterminators, and by constant vigilance. There must be proper refrigeration, storage space for poultry, supplies, containers, detergents, bactericides, and so on; and there should be proper public health supervision of employees and premises. Legislation should include permits and frequent inspection by trained personnel. Their list seems reasonable, yet necessitates expensive equipment, which may not be available for small scale dressers.

Tuberculosis[2] control has done much for reduction of animal sources of this disease, so much that it is said that the public has become too relaxed about this menace. Brucellosis[1] incidence has been greatly reduced since the control program which began in 1934.

With the huge population of this country and the enormous number of fowls consumed, their preparation for market has become a major industry. With expensive sanitary requirements the small producer may be increasingly eliminated and eventually may suffer the fate of the small dairyman.

Certainly an increasing number of veterinarians is needed to care for the constantly increasing crowded domestic animal and fowl populations.

1. Helvig, Raymond J.; and Hart, Russell W.: Poultry Sanitation Standards. Amer. J. Public Health, **41**:938 (Aug.) 1951.
2. Mingle, Carroll K.: Bovine Tuberculosis. Amer. J. Public Health, **41**:928 (Aug.) 1951.

SYNDROME OF VITAMIN A OVERDOSAGE

Since 1944, more than a dozen cases of vitamin A poisoning have been reported.[2] The picture would seem to be rather clear cut in infants and young children. Once seen or thought of, it should be easily recognized, and the physician should familiarize himself with its manifestations.

Blair,[2] of New York, has recently described a typical case. A twenty-eight-month-old boy developed swellings of the foot, right forearm, and temporal regions, severe itching of the back and arms, and refused to walk. His face was puffy and lips were fissured. The swellings were hard and sensitive to touch. X-ray showed dense cortical swelling of the middle third of the shaft of the ulna, femur, and elsewhere, with soft tissue swellings, new bone formation in some of the metatarsals, and a number of hyperostoses in the skull. The blood level of vitamin A was 1,040 International Units, while the normal is 50 to 150.

It was learned from the history that 20 drops of a vitamin A concentrate had been prescribed for the child, and through error, several times that amount had been administered over a period of three months. In addition to that the child ate large quantities of cheese, butter, eggs and other sources of vitamin A. He had apparently been

1. Mingle, Carroll K.: Brucellosis of Livestock. Amer. J. Public Health, **41**:923 (Aug.) 1951.
2. Blair, George: Chronic Vitamin A Poisoning. J.A.M.A., **146**:1573 (Aug. 25) 1951.

receiving more than 4 grams or 240,000 units of vitamin A daily.

He improved rapidly in the hospital when A was discontinued, and he was walking comfortably in three days. Within a month, all the hyperostoses except those of the skull had disappeared. The blood vitamin A level was at that time 750 I. U., which still is a number of times the normal.

Rineberg and Gross[1] in the past summer reported a case with a similar clinical history, in which a biopsy of bone was done. The picture was that of infantile cortical hyperostosis.

The condition is of course wholly preventable and is of much experimental and physiologic interest. Vitamin D is usually considered by clinicians to be of chief importance in rickets and bony maldevelopment. But vitamin A is also necessary for normal bone growth and may be active, as here, in the production of bony irregularities. One wonders about the mechanism of production of bone malformations in these cases. Calcium is thought of first in bone enlargements. There is a calcium misdirection. The chief mobilizer of calcium in the blood stream is the parathyroid hormone. What is the microscopic picture of parathyroid tissue during vitamin A intoxication?

In rheumatic disease, bony exostoses and soft tissue swellings are seen. By administration of adrenal cortical hormone they may at times be induced to disappear. What is the vitamin A level in such conditions? Is it altered in any of the degenerative diseases of middle life and old age? In what condition are the parathyroid glands in cases of abnormal bone shape and exostoses? What is the vitamin A level in the rarely reported cases of the "boy who is turning to stone"? Exposure to an abnormally high level of vitamin A, or a subclinically low, may cause endocrine responses which are difficultly reversible in later life.

The possibility of vitamin A overdosage by parents should be kept in mind. The overwhelming potency of minute quantities of modern drugs is apt to be an increasing menace. Even the vitamins, in quantities now available over the counter, may cause unexpected clinical disturbances.

1. Rineberg, I. E.; and Gross, R. J.: Hypervitaminosis A with Infantile Cortical Hyperostosis. J.A.M.A., **146**:1222 (July 28) 1951.

Book Reviews

The Neuroses—Diagnosis and Management of Functional Disorders and Minor Psychoses. By Walter C. Alvarez, M.D., Professor of Medicine, Emeritus, Mayo Foundation, University of Minnesota. 667 pages. Philadelphia: W. B. Saunders Company, 1951. Price $10.00.

Dr. Alvarez has rendered a great service to the medical profession by presenting in this book his many valuable observations on the recognition and treatment of mental and emotional disease. It has been the author's aim to discuss the neuroses, as a nonpsychiatrist, for his fellow nonpsychiatrists, with little technical terminology and with special emphasis on the practical aspects of helping the patient without enlisting a psychiatrist's assistance. He has done an admirable job, drawing on his own wide experience at the Mayo Clinic, and on the pertinent medical literature.

Recognition of the neurotic patient, and the types and causes of neurotic personalities are first considered. There is a fascinating chapter on the "little strokes" in the causation of nervous syndromes, which constitutes one of Dr. Alvarez' special interests. Psychosomatic problems of several medical and surgical specialties receive careful attention, and many pages are devoted to the management of the neurotic patient by a nonpsychiatrist. Innumerable case histories, anecdotes, and references to articles and books, many written by handicapped persons themselves, enliven the discussion. The bibliography is excellent. The book is, furthermore, clearly written, often amusing, and full of bits of wisdom such as a kindly old physician might pass on to his pupils. The author rightly stresses the maxim that medicine "should be an affair of the heart as well as of the head"; and again, that "all that is needed to help most patients is ordinary sensible advice."

It is unfortunate that the author, who makes much of tolerance and consideration for others, is himself biased and unjust when dealing with the psychoanalytic approach to the neuroses. He dwells upon the negative aspects and the failures of psychoanalytic methods and apparently refuses to appreciate their irrefutable therapeutic achievements and their tremendous contributions to the understanding of the neuroses. In spite of this, the volume truly fills a gap in the medical literature and deserves to be read by every young physician.

Microscopical Technique. For Workers in Animal and Plant Tissues. By thirty-five authors. Edited by Ruth McClung Jones, Professor of Biology, Winthrop College, South Carolina. Third Edition. 790 pages, with 157 illustrations. New York: Paul B. Hoeber, Inc., 1950. Price $12.00.

Just as a good cookbook is a useful compilation of "true-and-tried" recipes for both the experienced and the inexperienced culinary artist, so a handbook of microscopic technic is invaluable for all classes of technicians and research workers in all branches of biological microscopical work. This is especially true of the new third edition of McClung's already indispensable volume which does not limit itself to recipes and formulae but, beyond these, presents adequate lists of references,

elucidates the principles involved in the technic and gives extensive information regarding the character of the tissues and cells concerned.

The first edition of this volume was published by Dr. McClung some twenty-one years ago. The third edition is edited, since his death, by his daughter who, with the continued cooperation of the original thirty-five authors, or successors thereof, has made every effort to include the advancements which have occurred in this field, especially the remarkable progress of the past decade. Due to the required expansion and the size-limit of the volume, the editor regrets the resultant elimination of bacteriological and botanical procedures.

The volume is divided into three parts. Part I is intended for the inexperienced with specific directions for basic methods, fixatives and stains. Part II is for the more experienced worker who "seeks the latest approved methods for the accomplishment of special technical results." Part III includes "special procedures with general application." It presents methods applicable to biological material with the use of the phase, fluorescence, centrifuge, electron and polarization microscope, also the use of the radio autographic, microincineration, micrurgical, microinjection, vital and supravital procedures for the study of both fresh and fixed material.

The editor deserves the thanks of her biological colleagues for her exhaustive and critical contribution in modernizing, expanding and bringing up to date this handbook of technic.

Clinical Heart Disease. By Samuel A. Levine, M.D., F.A.C.P., Clinical Professor of Medicine, Harvard Medical School. Fourth edition. 556 pages with 192 illustrations. Philadelphia and London: W. B. Saunders Company, 1951. Price $7.75.

In this new edition of a well-known text, a number of revisions and additions have been made, in line with more recent developments in the management of cardiac disease. The more important among these are the use of anticoagulants in coronary thrombosis, new trends in cardiac surgery, and catheterization of the heart. The section on electrocardiography has been extensively revised and enlarged. Dr. Levine is, of course, an authority in his field, and his book is largely based upon his extensive personal experience. The clinical point of view is always stressed, and the chapter on acute cardiovascular emergencies deserves particular praise in this regard. Since this volume enjoys great popularity with medical students, a future edition might well include the important steps in the physical examination of the cardiac patient.

Medical Jurisprudence and Toxicology. By John Glaister, J.P., D.Sc., M.D., F.R.S.E., of the Inner Temple, Barrister-at-Law, etc.; Regius Professor of Forensic Medicine, University of Glasgow. Ninth Edition. 755 pages, with 234 illustrations, 88 in color. Baltimore: The Williams and Wilkins Company, 1950. Price $7.00.

The ninth edition of this authoritative treatise should be welcomed by those physicians interested in medico-legal cases. Though it is concerned with English and Scottish law, the postmortem findings in death by violence, the numerous case histories, and the superb illustrations make it a valuable reference. Unfortunately, the section on toxicology is somewhat out of date.

Allergy: Facts and Fancies. By Samuel M. Feinberg, M.D., Associate Professor of Medicine, Chief of Section of Allergy and Director of Allergy Research Laboratory, Northwestern University Medical School. 173 pages. New York: Harper and Brothers, 1951. Price $2.50.

Dr. Feinberg's interesting little book is one more step forward in the effort of the medical profession to educate the general public in matters of health.

In the attempt to escape the charge of undue enthusiasm he has erred on the side of conservatism. Some of his discussions are too abbreviated. Also in a book intended for general distribution it would seem best to avoid discussion of such controversial subjects as allergy to molds and fungi as well as the use of the passive transfer in diagnosis. The space devoted to these subjects could have been devoted to the more definitely established inhalants and foods which account for approximately ninety per cent of clinical allergy.

Paul Ehrlich. By Martha Marquardt. With an introduction by Sir Henry Dale. 255 pages. New York: Henry Schuman, Inc., 1951. Price $3.50.

This biography deserves to be read widely. It is not often that such an excellent picture of a great scientist is encountered. A member of the "Life of Science Library" series, it treats Ehrlich from a humanistic point of view without overlooking any of his important scientific advances. Miss Marquardt was Ehrlich's private secretary for his last thirteen years, and consequently, has been able to include a number of personal anecdotes that give the reader a close insight into her subject. This is the best, and almost the only, biography available of the discoverer of arsphenamine. It is, indeed, a fine study.

Steroid Hormones and Tumors. Tumorigenic and Antitumorigenic Actions of Steroid Hormones and the Steroid Homeostasis. Experimental Aspects. By Alexander Lipschutz, M.D., Formerly Professor of Physiology, Hon. M. Roy. Soc. Med. (Endocrinol.); Charles M. Mayer Cancer Award, National Science Fund of the National Academy of Sciences, 1944; Director of the Department of Experimental Medicine, National Health Service of Chile. 309 pages, illustrated. Baltimore: The Williams and Wilkins Company, 1950. Price $6.00.

The interesting studies of Dr. Lipschutz and his collaborators on the production of fibromata and other tumors in the guinea pig by the administration of estrogens, and its antagonism by progesterone are amply presented in this volume. Many highly speculative aspects of the relationship of the endocrines to the cancer problem are included. Although the author discusses his experiments in extreme detail and frequently brings in comparatively irrelevant material, the book should be very important to those especially interested in this subject.

Books Received

Community Health Education in Action. By Raymond S. Patterson, Ph.D., Director of Health Education, John Hancock Mutual Life Insurance Company; and Beryl J. Roberts, Ed. M., M. P. H., Associate in Health Education, Harvard School of Public Health; Director of Health Education, Massachusetts Division American Cancer Society. 346 pages with illustrations. St. Louis: The C. V. Mosby Company, 1951. Price $4.50.

Human Biochemistry. By Israel S. Kleiner, Ph.D., Professor of Biochemistry and Director of the Department of Biochemistry, New York Medical College, Flower and Fifth Avenue Hospitals; formerly Associate, The Rockefeller Institute for Medical Research, New York. Third edition. 695 pages with 83 text illustrations and 5 color plates. St. Louis: The C. V. Mosby Company, 1951. Price $7.00.

Diabetes Control. By Edward L. Bortz, M.D., Chief of Medical Service B, The Lankenau Hospital; Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, Philadelphia; Past President, American Medical Association. 264 pages, illustrated. Philadelphia: Lea and Febiger, 1951. Price $3.50.

Inhalation Anesthesia. By Arthur E. Guedel, M.D., Associate Clinical Professor of Surgery (Emeritus), University of Southern California School of Medicine. Second edition. 143 pages. New York: The Macmillan Company, 1951. Price $3.75.

Chronology of Ophthalmic Development. By Arthur H. Keeney, M.D., Wills Eye Hospital, Philadelphia, Pennsylvania. 22 pages. Springfield, Illinois: Charles C. Thomas, Publisher, 1951. Price $2.00.

Incontinence in Old People. By John C. Brocklehurst, M.D., Major R. A. M. C.; formerly Christine Hansen Research Fellow in the University of Glasgow. 191 pages with illustrations. Baltimore: The Williams and Wilkins Company. Price $6.50.

The Architecture of Normal and Malformed Hearts. By Alexander Spitzer, M.D. Translated and summarized by Maurice Lev, M.D., Associate Professor of Pathology, University of Illinois, College of Medicine; Associate Pathologist, University of Illinois Hospitals; and Aloysius Vass, M.D., Consultant Pathologist, Veterans Administration Hospital, Poplar Bluff, Missouri. 144 pages with illustrations. Springfield, Illinois: Charles C. Thomas, Publisher, 1951. Price $5.00.

Instruments and Apparatus in Orthopaedic Surgery. By E. J. Nangle, M.D., Ch.B., F.R.C.S., formerly Resident Surgical Officer, Royal National Orthopaedic Hospital, Stanmore and R. S. O. Wingfield-Morris Orthopaedic Hospital, Oxford Beit Fellow. 231 pages with illustrations. Springfield, Illinois: Charles C. Thomas, Publisher, 1951. Price $9.50.

A Color Atlas of Morphologic Hematology. By Geneva A. Daland, B.S., Chief Laboratory Assistant in Hematology, Thorndike Memorial Laboratory; Research Laboratory Technician, Boston City Hospital. Edited by Thomas Hale Ham, M.D., Assistant Professor of Medicine, Harvard Medical School; Associate Director, Thorndike Memorial Laboratory, Junior Visiting Physician, Boston City Hospital. 74 pages with illustrations. Cambridge, Massachusetts: Harvard University Press, 1951. Price $5.00.

Frontal Lobotomy and Affective Behavior: A Neurophysiological Analysis. By John F. Fulton, M.D., Sterling Professor of Physiology, Yale University. 160 pages with illustrations. New York: W. W. Norton & Company, Inc., 1951. Price $3.00.

Allergy in Relation to Pediatrics. By Bret Ratner, M.D., Professor of Clinical Pediatrics (Allergy) and Associate Professor of Immunology, New York Medical College; Attending Pediatrician, Flower and Fifth Avenue Hospitals; Director of Pediatrics, Sea View Hospital. 228 pages. St. Paul: Bruce Publishing Company, 1951. Price $3.75.

Experiment in Dental Care: Results of New Zealand's Use of School Dental Nurses. By John T. Fulton, D.D.S., Dental Services Adviser, Children's Bureau, Social Security Administration, Federal Security Agency, Washington, D. C. 87 pages with illustrations. Geneva, Switzerland: World Health Organization, 1951. Price $1.00.

Technical Methods for the Technician. By Anson Lee Brown, B.A., M.D. Fourth edition. 784 pages with illustrations. Columbus, Ohio: Anson L. Brown, Inc., 1951. Price $10.00.

Occupational Marks and Other Physical Signs: A Guide to Personal Identification. By Francesco Ronchese, M.D., Instructor in Dermatology, Boston University School of Medicine; Dermatologist in Chief, Rhode Island Hospital, Providence, Rhode Island. 181 pages with illustrations. New York: Grune and Stratton, 1948.

Obstetrical Practice. By Alfred C. Beck, M.D., Professor Emeritus of Obstetrics and Gynecology, State University of New York, College of Medicine at New York City; formerly Professor of Obstetrics and Gynecology, Long Island College of Medicine; formerly Obstetrician and Gynecologist-in-Chief, Long Island College Hospital; Consultant in Obstetrics and Gynecology, Long Island College Hospital and Norwegian Hospital, Brooklyn, N. Y., U. S. Naval Hospital, St. Albans, N. Y., Vassar Brothers Hospital and St. Francis Hospital, Poughkeepsie, New York. Fifth edition. 1073 pages with illustrations. Baltimore: The Williams and Wilkins Company, 1951. Price $10.00.

The Public Health Nurse and Her Patient. By Ruth Gilbert, R.N., Coordinator, Course for Mental Hygiene Consultants, and Assistant Professor of Nursing Education, Teachers College, Columbia University, New York, N. Y. 348 pages. Cambridge, Mass.: Harvard University Press, 1951. (Published for the Commonwealth Fund). Price $3.75.

Surgery of the Stomach and Duodenum. By Claude E. Welch, M.D., Associate Visiting Surgeon, Massachusetts General Hospital; Clinical Associate in Surgery, Harvard Medical School. 349 pages with illustrations. Chicago: The Year Book Publishers, Inc., 1951. Price $8.50.

Ophthalmology. By Arno E. Town, M.D., Professor of Ophthalmology, The Jefferson Medical College of Philadelphia. 511 pages with 208 illustrations and 4 plates in color. Philadelphia: Lea and Febiger, 1951. Price $10.00.

Food and You. By Edmund Sigurd Nasset, Ph.D., Professor of Physiology, Department of Physiology and Vital Economics, University of Rochester. 92 pages. Springfield, Illinois: Charles C. Thomas, Publisher, 1951. Price $3.00.

Bacterial and Virus Diseases: Antisera, Toxoids, Vaccines and Tuberculins in Prophylaxis and Treatment. By H. J. Parish, M.D., F.R.C.P.E., D.P.H., Clinical Research Director, Wellcome Foundation Ltd.; formerly Bacteriologist, Wellcome Research Laboratories. Second edition. 204 pages with illustrations. Baltimore: The Williams and Wilkins Company, 1951. Price $2.50.

A Text-Book of Medicine. Edited by E. Noble Chamberlain, M.D., M.Sc., F.R.C.P., Senior Lecturer in Medicine, University of Liverpool; Senior Physician, Royal Southern Hospital, Liverpool; Physician in Charge, Medical Unit, Sefton General Hospital, Liverpool. 962 pages with 266 illustrations. Baltimore: The Williams and Wilkins Company, 1951. Price $10.00.

The Organization of Bones. By P. Lacroix, Professor in the Faculty of Medicine, University of Louvain, Belgium. Translated from the Amended French Edition by Stewart Gilder, Assistant Editor, "Abstracts of World Medicine." 235 pages with 87 illustrations. Philadelphia: The Blakiston Company, 1951. Price $6.00.

The Changing Years: What to Do About the Menopause. By Madeline Gray. 224 pages. New York: Doubleday and Company, Inc., 1951. Price $2.75.

From Dugout to Hilltop. By Margaret R. Stewart, M.D. 233 pages. Culver City, California: Murray and Gee, Inc., 1951. Price $3.75.

Studies of Undernutrition, Wuppertal 1946-49. By Members of the Department of Experimental Medicine, Cambridge, and Associated Workers. 404 pages with illustrations. London: His Majesty's Stationery Office, 1951. Price 12s. 6d.

Southern Medical News

ALABAMA

Laboratory work for the isolation of the virus of encephalitis was done at the Communicable Disease Center laboratory in Montgomery, it has been announced by the Public Health Service of the Federal Security Agency.

The Medical College of Alabama and the Jefferson County Health Department, Birmingham, have received a grant of approximately $31,000 from the Public Health Service of the Federal Security Agency for developments of laboratory tests in malignancy. Dr. Joseph K. Cline will administer the fund.

The Southeastern Dermatological Association held its sixteenth annual meeting in Birmingham on Sunday, September 2. Dr.

MEDICAL NEWS continued on page 54

Dr. Frank A. Selecman

A MESSAGE FROM THE CHAIRMAN OF THE GENERAL ARRANGEMENTS COMMITTEE

A WELCOME TO THE DALLAS MEETING

Dallas doctors will take pride in having as their guests next month the members and friends of the Southern Medical Association, and we are particularly proud of having our own Dr. Curtice Rosser as President of the Southern at this time.

For many years Dallas has taken a most active part in postgraduate medical education. Dr. Oscar Marchman, Sr., who for many years has been a loyal and active member, and former Councilor for Texas of the Southern Medical Association, took the lead in organizing the Dallas Southern Clinical Society which has been our chief local organization for the promotion of postgraduate education in medicine.

Dallas has been the home of Baylor University College of Medicine, and later the home of Southwestern Medical College which is now a branch of the University of Texas. We are, therefore, most receptive to this remarkable opportunity for the extension of medical education in our city.

As Chairman of the General Arrangements Committee, I am most grateful for the cooperative spirit of the Dallas doctors as a whole, and particularly those serving as chairmen of committees, and the committee men themselves. Each one has shown evidence that he wishes to do his part to make his part of the program a great success.

The Southern brings us a meeting which is about twice the size of the usual meeting to be held in our city, but no one has exhibited any fear that we may not succeed in meeting the demands.

Besides the educational facilities, there will be opportunities during the course of the meeting for many social activities. The importance of these is also recognized. The Woman's Auxiliary is, as usual, well organized to play its most important part.

It is our most sincere desire to make all feel at home and glad they came to Dallas.

FRANK A. SELECMAN, M.D.
General Chairman.

Dallas, Texas, September 10, 1951.

Aerial view of downtown Dallas from Triple Underpass

DALLAS—WHERE WE MEET

DALLAS*

Dallas, sophisticated queen of the Southwest, was founded as a trading post, and a trading post it is today, magnified to the nth degree. For this colorful city of thriving commerce, gala amusement and a unique civic spirit, is the Southwest's greatest financial, entertainment and retail market.

Its metropolitan skyline rises abruptly from the flat North Texas prairie, topped by Pegasus, the "Flying Red Horse," galloping in neon across a blue sky. This much-talked-of skyline is a beloved pride of natives. It signifies the achievement of Dallas people in erecting on the open plains a cosmopolitan empire of industry, finance, culture, fashion, beautiful homes and gracious living.

*Prepared by Mr. Philip E. Fox, Watson Associates, Dallas, Texas.

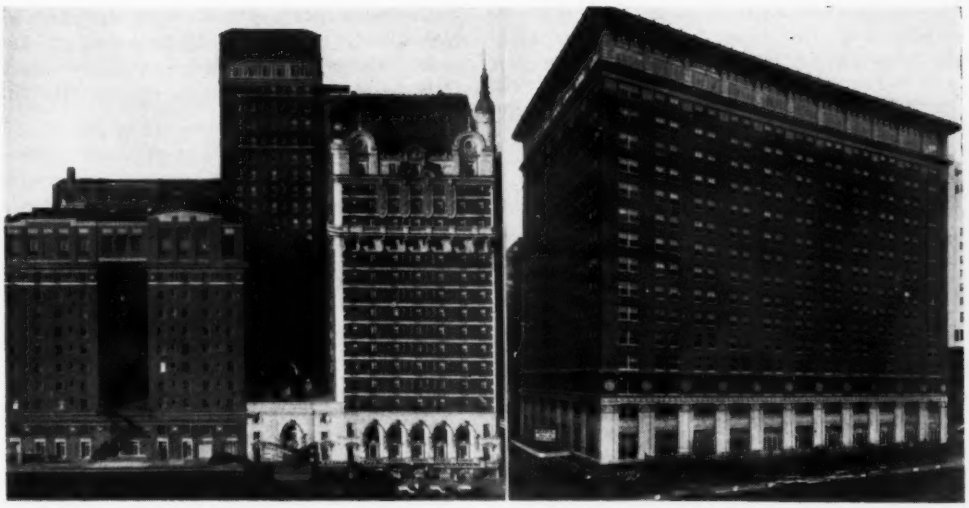
Though rich in natural resources, Dallas' chief asset from its earliest days has been its vigorous people.

HISTORY

One cold November evening in 1841, John Neely Bryan, a lone Tennessee traveler riding an Indian pony, pitched camp at dusk on the east bank of the Trinity River.

Four years before, an adventurous band of thirty had tried to explore the wilderness of North Texas and had been massacred and routed by Indians. No white man had dared again to venture across it until Bryan came.

After a night of rest the traveler surveyed his campsite. The land, he found, was rich and fertile and wild game was abundant. Resolving to homestead here, he fashioned a plow from the forked branch of a bois d'arc tree, harnessed



Adolphus Hotel

Baker Hotel

his pony with strips of buffalo hide and settled down for good.

In the spring a pioneer family, rowing down the Trinity by canoe, stopped to visit with the lone homesteader. Bryan traded them some bear meat and honey for some tobacco, and persuaded them to become his neighbors. Before the year was over five more families, seeking new land, had joined the settlement which they called Peter's Colony, after the man who had obtained the original land grant in 1841.

As his neighbors multiplied, Bryan opened a trading post. His stock, transported 190 miles from Shreveport (then a journey of 40 days) consisted of a barrel of whiskey, a keg of tobacco and powder, lead and caps.

Bryan married the daughter of another settler and built for her the first log cabin in the colony. Here the next year was born the first white child in what was to become Dallas County. The 12x10 foot dirt-floored cabin served as Bryan's home, trading post, the village post office, courthouse and town meeting hall. Today this log cabin, carefully restored, stands as a landmark on the lawn of the Dallas County Courthouse and is visited annually by thousands of tourists.

Harassed by Indians, the settlers fought and worked to wrest a living from the wilderness. They dressed in buckskins, ate wild meat and tilled the rich soil. After their work was done they created their own fun, with square dances and corn huskings, thereby founding a heritage of industry and self-made amusement for which modern Dallas today is famed.

The colony became an official village in 1846 after the annexation of Texas to the United States. The settlers changed its name to Dallas in honor of George Mifflin Dallas, vice president during the Polk administration, who championed the pro-slavery wing of the Democratic party and supported the annexation of Texas.

The first mayor of Dallas, elected by a voting population of 92, was a pioneer physician, Dr. Samuel B. Pryor.

It was still a wild frontier with Comanches roaming the prairies to the west, but Dallas, the last outpost of civilization, was strategically located as a stage coach stop, and trading thrived. By 1860 it had 775 people and 29 business houses on the town square.

Then a cruel blow fell when fire broke out in a drug store and razed every building to the ground. But the courageous pioneers rebuilt and forged ahead. Every decade saw the population doubled or tripled.

Milestones were the Civil War, when Dallas County gave 1,300 men to the Confederate Army;

the struggle of Reconstruction, and then the coming of the first railroad, in 1872, to supplant the stage coach. Dallas citizens had put up a $5,000 cash bonus, 115 acres of land and free right-of-way to lure the railroad through their town. Eastern millionaire Jay Gould visited Dallas and predicted it would become "the first city of the Southwest."

New business firms and more people followed the railroads. Dallas set out on a marathon growing spree and developed a master plan to

Dallas Athletic Club

Stoneleigh Hotel (left) and Maple Terrace Apartments (right)

A typical tourist court (motel)

Hotel Jefferson with Union Terminal to the left

White-Plaza Hotel

grow with purpose. The building boom of the Roaring Twenties pushed the town into the ranks of the nation's major cities.

Dallas escaped the depths of the depression experienced by many cities in the '30s, for a new oil field discovered in East Texas pumped new financial blood into the arteries of the nearby metropolis.

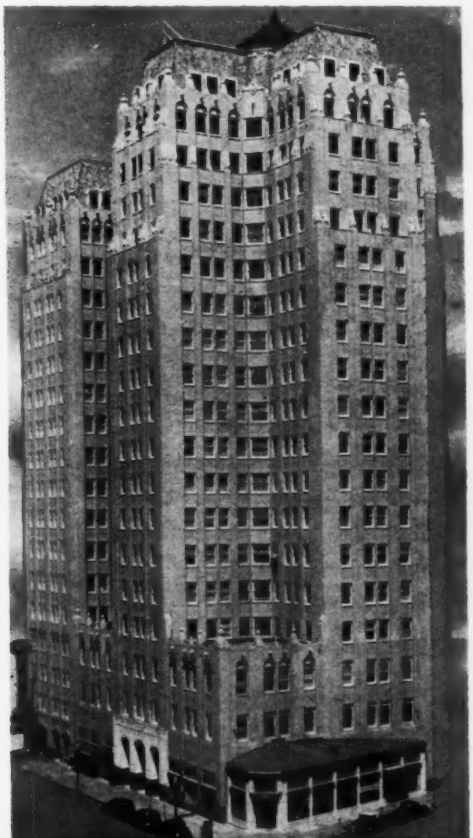
During and after World War II, eastern industries seeking space to spread out and pleasant living for their people, flocked to Dallas, making the vigorous young city a leader in a great new region of opportunity.

Mercantile National Bank Building, a typical Dallas office building

MODERN DALLAS

A city of more than half a million people, governed by council-manager system, Dallas is at the center of a new industrial frontier. Its business commands a market of 18 million people in seven states with annual spending power of seventeen billion dollars. Closer home, within a radius of 100 miles, are more than two million people who look upon Big D as their market place and entertainment center.

Dallas does not have its economic eggs in one basket, and thus lives free from the fears which hang over mill towns or specialized communities dependent on a single product. The base of Dallas' prosperity is broad and diversified.

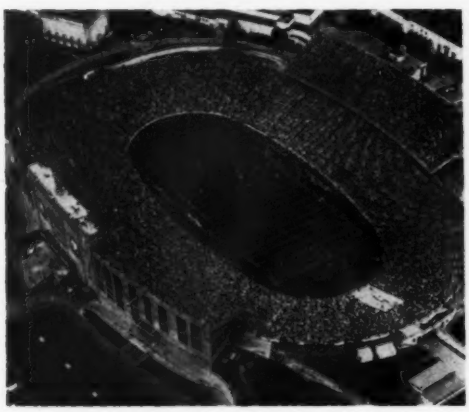


Medical Arts Building, first and largest Medical Arts Building in the United States. There is an eighty-two bed hospital on the top floors.

Hall of State, Historical Museum, Texas State Fair Grounds

Love Field, Municipal Airport

Union Railroad Terminal



The Cotton Bowl

It is the leading spot cotton market in the United States, and one of the oil capitals of the hemisphere. It has a billion dollar wholesale business. It is the chief banking, insurance and securities center of the Southwest and an international fashion capital. Dallas banks are called the "lendingest" in the country in ratio of loans to deposits. The 11th District Federal Reserve Bank, located here, serves all of Texas and parts of four other states.

The new Southwest edition of the *Wall Street Journal* is published in Dallas to supply the financial papers on the day of issue to business executives in ten states.

A thriving and rapidly expanding manufacturing center, Dallas makes everything from airplanes to soap. One-half of the world's cotton gins are manufactured here.

Beside these mammoth enterprises are thou-

Dallas' New Central Expressway, a thirty-five million dollar traffic artery

sands of flourishing small businesses, giving resilience to the area's economy. In 1949 Dallas was chosen for location by 1,192 new business firms, both large and small. The city's median per family income of $3,461 is eleven per cent above the national average.

Dallas' clean air and smoke-free skyline are due to nature's lavish gift of natural gas to fuel its fires, for the gas burns smokelessly. The average Dallas child has never seen coal.

As gateway to Texas and Mexico and a crossroad of the United States, Dallas is still a hub of travel, as in stage coach days. The Union Terminal, recently remodeled at a cost of one and one-quarter million dollars, serves a vast network of railroads. Dallas is the home of the country's largest independent bus line.

There are three municipal airports. Love Field, the largest, is one of the ten busiest airports in the country and ranks sixth nationally in originating airmail. Seven major airlines schedule 222 Dallas arrival and departure flights daily.

Because of Dallas' strategic position on the air route, people in Mexico City read the same edition of the *Dallas Morning News* at their breakfast tables that Dallasites are reading at theirs. It is the only United States daily available there on such a schedule.

CULTURE

Dallasites, the "dynamic men" described in *Fortune Magazine,* love their city with a passion. They spend money extravagantly and with astute showmanship to provide advantages for it.

Like the early settlers who created their own diversions, Dallas is noted for its civic-sponsored culture and entertainments.

Each October Dallas presents the world's largest State Fair, staged in a thirty-five million dollar plant built by 64 years of work. The Fair attracts more than one million visitors annually. The city fathers made the plant available to the State of Texas for the spectacular Texas Centennial Exposition in 1936 and Pan-American Exposition in 1937.

The State Fair Grounds is the site of the Cotton Bowl, enlarged twice by civic subscriptions to a present capacity of 70,000 seats. The city is pigskin-happy from the first frost until the Bowl classic each New Year's Day.

Independent of the amusement capitals of New York and Hollywood, Dallas produces its own professional drama in its Theatre '51, importing actors from Broadway and attracting New York drama critics to review many of the plays. The city supports a major symphony orchestra and stages its own summertime State Fair Musicals in its air-conditioned auditorium.

Civic leaders pledge financial underwriting to bring the Metropolitan Opera Company to Dallas each spring. The first season, in 1939, marked the first time the illustrious Metropolitan had been lured west of the Mississippi River.

Parkland Hospital, largest unit of City-County hospital system

Baylor Hospital, Truitt Memorial Building

Veterans Administration Hospital

PARKS, SCHOOLS AND CHURCHES

The beautiful State Fair Civic Center is only one part of an immense municipal park system serving adults and children the year round. The City of Dallas maintains 82 public parks, 50 supervised playgrounds, eight major swimming pools and 32 junior pools, 27 lighted softball diamonds, four golf courses, three bridle paths, 70 tennis courts with six of them lighted for night playing, two lagoons for fly-rod casting, and a 60-acre zoo with 1000 specimens of birds, animals and reptiles.

White Rock Lake, a 15-minute ride from downtown Dallas, is noted for its scenic drives, picnic grounds, fishing, motorboating, sailing, water-skiing, surf-boarding and swimming.

Dallas has 152 public, parochial and private schools and is the home of Southern Methodist University, one of the leading co-educational institutions of the Southwest and a major contributor to colorful champion football in the Southwest conference.

Dallas has 300 churches of more than 25 denominations.

THINGS TO DO AND SEE

Acknowledged as the amusement capital of the Southwest, Dallas has a gala night life. There are more than a score of night clubs and smart supper rooms presenting name bands and floor shows.

For the gourmet, fashionable restaurants offer French, Swedish, German, white Russian, Chinese, Italian, Spanish, Mexican, American and native Texan cuisines.

Special entertainment events in Dallas during the Southern Medical Association convention will include Theatre '51, reopening November 5 for its winter season with performances every night except Sunday, with matinees each Wednesday and Saturday, and a Rodgers-Hammerstein concert on Friday night, November 9, at the Auditorium. In the Cotton Bowl Saturday, November 3, Southern Methodist University will play the University of Texas.

Dallas has 67 motion picture theatres and many professional sports including baseball, wrestling and ice hockey.

Young Men's Christian Association

St. Paul's Hospital

Besides its culture and urbanity, Dallas still borders the West. There are dude ranches, as well as real ones, nearby.

Museums open to visitors and presenting indigenous and imported exhibits are the Dallas Museum of Fine Arts, the historically absorbing Hall of State, the Museum of Natural History, the Dallas Health Museum and the Aquarium, all located in State Fair Park.

The world's largest bookstore, Cokesbury's, is situated on Main Street. Another small but widely renowned bookshop, McMurray's, is situated in the heart of the cafe and night club district. It is open Sundays as well as weekdays and is open for browsing every night until after midnight.

A substantial Mexican population is centered in an exotic area known as "Little Mexico," with colorful curio shops and restaurants.

An attraction to visitors is Lambert Gardens and Antique Row, a collection of antique shops occupying a stretch of several blocks along Cedar Springs Avenue. This formerly seedy neighborhood has been reclaimed and beautified by the nationally famous landscape architect, Joe Lambert, who is a resident of Dallas.

Other sight-seeing attractions are scenic boulevards of beautiful homes and estates and the John Neely Bryan cabin on the Courthouse square.

Of interest to wives of medical delegates will be the weekly luncheon style shows presented in the dinner rooms of Dallas' two principal hotels, on Tuesdays in the Adolphus Century Room and on Wednesdays in the Baker Hotel Mural Room.

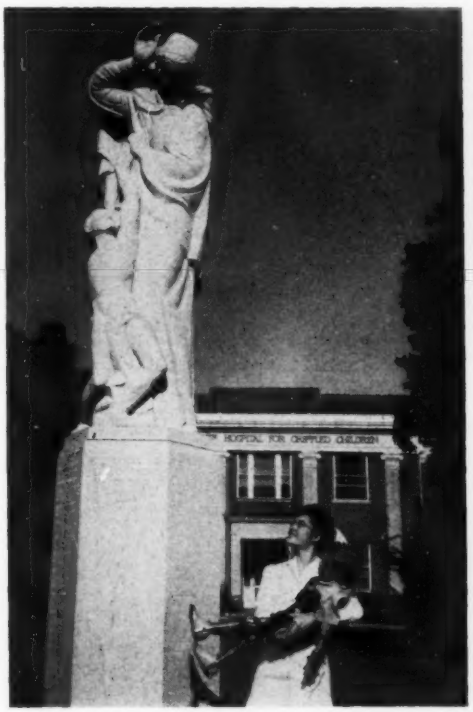
MEDICAL DALLAS

Dallas occupies an eminent place as a medical center in technical resources, professional skill and scientific research.

In the city are 45 in-patient institutions, with a total bed capacity of 3,634. These include five major general hospitals plus many specialized hospitals and clinics.

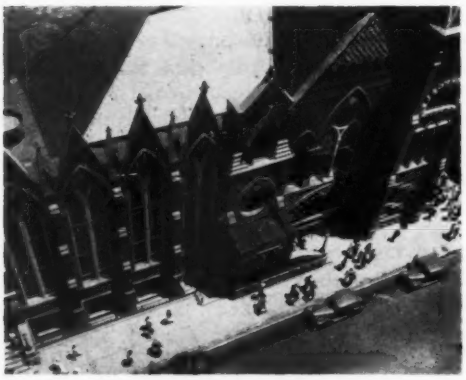
Temple Emanu-El

Cerebral Palsy Treatment Center



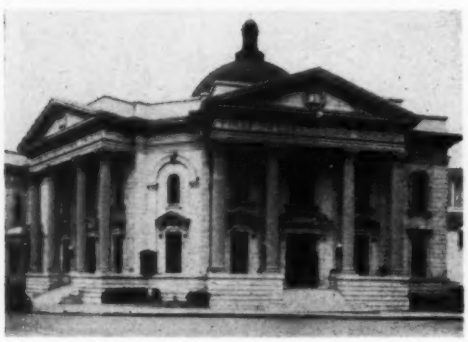
Scottish Rite Crippled Children's Hospital

Of steadily increasing importance and scope in the medical field of the region is Southwestern Medical School, a branch of the University of Texas. Founded by a group of Dallas citizens and medical leaders to promote medical education and research, it was opened in 1943 and became a branch of the state university in 1949. At present the school is housed in temporary buildings on the grounds of Parkland Hospital but a site has been selected for the construction of a permanent home.



First Baptist Church

Highland Park Methodist Church



First Presbyterian Church

The chief research subjects being investigated at the school are (1) hypertension; (2) kidney failure; (3) use of radioactive materials in the study of various physiologic phenomena; (4) mineral metabolism; (5) polio and C-viruses; (6) cancer.

Largest of Dallas' general hospitals is the 731-bed Baylor University Hospital, founded in 1902 as a small cottage with 12 beds and now one of the best equipped and most modern medical institutions in the nation. Units on the Baylor campus are the newly completed Truett Memorial Hospital, the Florence Nightingale Maternity Hospital, the Austin Moore Orthopedic Center, the Charles Burleson Roberts Medical Library, the William Buchanan Blood, Plasma and Serum Center which was the first of its kind in the world, and the Wadley Research Foundation now under construction. Exhaustive research has been conducted at Baylor upon hematology and blood banking. Another contribution of Baylor was the originating of hospitalization insurance, now nation wide. Its pioneer plan was later merged with Blue Cross.

The 416-bed Parkland Hospital, founded in 1894, is the central unit of the 651-bed city-county hospital system. Both St. Paul's Hospital, now 325 beds, and Methodist Hospital, 208 beds, are increasing their size with new enlargement projects. A hospital-in-the-sky is the 82-bed Medical Arts Building Hospital in downtown Dallas. Bonds have been voted for a new thirteen million dollar city-county hospital. Construction of the 800-bed building is to start this year.

The Children's Medical Center is composed of four separate hospitals and clinics for the treatment of child diseases. Its units are Texas Children's Hospital, Bradford Memorial Hospital for Babies, Freeman Memorial Clinic and the Tuberculosis Unit. Located in the Center geo-

graphically but operated independently are the Texas Scottish Rite Hospital for Crippled Children, the Hope Cottage Foundling Home, and a new addition, the Cerebral Palsy Treatment Center, now being erected through the gift of funds from Dallas citizens and the gift of construction work by Dallas' labor unions.

A major contribution to postgraduate medical instruction is the annual conference of the Dallas Southern Clinical Society which attracts more than 1,000 physicians each spring. Monthly seminars in the various specialties are conducted by the society each month.

The Dallas County Medical Society was organized in 1876, when the city's pioneer physicians were making their calls on horseback and carried a stock of drugs in their saddlebags. Today it has 780 members.

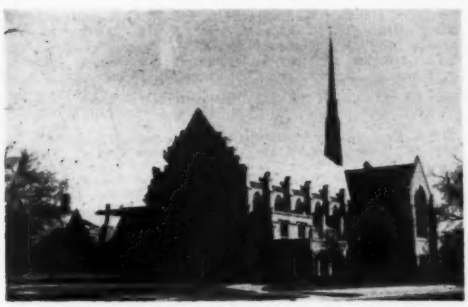
Members of the medical profession have played an active role in their city's development civically as well as medically. Dallas' first elected mayor, in 1856, was a physician. Today and for the last six years a physician has been elected to the City Council. Serving at present is Dr. George Schenewerk, who was preceded by Dr. Harold O'Brien and Dr. Everett Fox. The medical profession has also been represented for many years on the city's Board of Education.

The 1951 meeting of the Southern Medical Association in Dallas will mark the third time this illustrious organization has chosen Dallas for its convention site. Its last meeting here was in 1925. Those who attended that session and will return this year will see a vast change in the community both as a city and as a medical center.

The hospitality for which Dallas is famed is ready for the members and guests of the Southern Medical Association.

Sacred Heart Cathedral

Central Christian Church



Highland Park Presbyterian Church

OFFICERS, DALLAS COUNTY MEDICAL SOCIETY

President—Dr. Charles L. Martin.

President-Elect—Dr. Barton E. Park.

Vice-President—Dr. Martin S. Buehler.

Secretary—Dr. W. W. Fowler.

Treasurer—Dr. J. B. Howell.

Executive Secretary—Mr. Millard J. Heath.

Censors—Dr. Ridings E. Lee, Chairman; Dr. John L. Goforth and Dr. Alvin Baldwin, Jr.

Board of Directors—Dr. Elliott Mendenhall, Chairman; Dr. Charles L. Martin, Dr. W. W. Fowler, Dr. J. B. Howell, Dr. Martin S. Buehler, Dr. Barton E. Park, Dr. Ridings E. Lee, Dr. David W. Carter, Dr. Robert F. Short, Dr. R. G. Carpenter, and Dr. Edward White.

COMMITTEES ON ARRANGEMENTS

Dallas

General Chairman—Dr. Frank A. Selecman.

Vice General Chairman—Dr. Everett C. Fox, Chairman; Dr. Oscar M. Marchman, and Dr. Edward White.

Executive—Dr. Frank A. Selecman, Chairman; Dr. Milford O. Rouse, Dr. Charles L. Martin, and Dr. Curtice Rosser, Ex-officio.

Advisory—Dr. Rex E. Van Duzen, Chairman; Dr. Edward H. Cary, Dr. Carl A. Moyer, Dr. Robert Short, Dr. Paul Williams, Dr. C. C. Nash, Dr. G. E. Brereton, Dr. Andrew B. Small, Dr. Guy F. Witt, Dr. L. S. Thompson, Dr. Elbert Dunlap, Dr. Warren E. Massey, Dr. R. A. Trumbull, and Rev. B. F. Bennett.

General Sessions Program—Dr. Edwin L. Rippy, Chairman; Dr. James H. Herndon, Dr. Frank H. Kidd, Jr., Dr. George M. Jones, Dr. John G. Young, Dr. Hill Metz, Dr. Jo C. Alexander, and Dr. P. M. Girard.

Entertainment—Dr. Martin S. Buehler, Chairman; Dr. Raworth Williams, and Dr. Hall Shannon.

Reception—Dr. Howard K. Crutcher, Chairman; Dr. G. E. Brereton, Vice-Chairman; Dr. C. Frank Brown, Dr. S. R. Bumpass, Dr. Homer Donald, Dr. Thomas M. Kirksey, Dr. D. P. Laugenour, Dr. W. E. Martin, Dr. Ramsay Moore, Dr. Louie E. Allday, Dr. E. L. Evans, Dr. Marianna Hood, Dr. George M. Jones, Dr. Herman I. Kantor, Dr. Oscar Marchman, Jr., Dr. Arch J. McNeill, Dr. V. M. Payne, Jr., Dr. John B. Peyton, Dr. Sam A. Alexander, Dr. William M. Ashe, Dr. Dale J. Austin, Dr. Grant L. Boland, Dr. Guy T. Denton, Jr., Dr. Doyle W. Ferguson, Dr. Foster Fuqua, Dr. A. J. Gill, Dr. J. B. Griffin, Dr. H. C. Henderson, Jr., Dr. Carey Gray King, Jr., Dr. Albert O. Loiselle, and Dr. Victor I. Lyday.

Membership—Dr. Charles B. Shuey, Chairman; Dr. Robert J. Rowe, Dr. Manning B. Shannon, Jr., Dr. P. C. Talkington, Dr. John S. Bagwell, Dr. John M. Pace, Dr. C. D. Bussey, Dr. Ramsay Moore, Dr. Hudson Dunlap, Dr. Brandon Carrell, Dr. R. G. Carpenter, Dr. Guy T. Denton, Jr., Dr. John B. Chester, Dr. Harry M. Spence, and Dr. Taylor T. Pickett.

Hotels—Dr. Alvin Baldwin, Jr., Chairman; Mr. Millard J. Heath, Vice-Chairman; Dr. E. E. Muirhead, and Dr. Tom E. Kelly.

Publicity—Dr. Elliott Mendenhall, Chairman; Dr. Barton E. Park, Dr. Homer Donald, Dr. Paul J. Thomas, and Dr. Donald L. Paulson.

Radio and Television—Dr. Tom E. Smith, Chairman; Dr. A. B. Cairns, Dr. Hubert F. Hawkins, Dr. W. K. Strother, Jr., and Dr. J. B. Howell.

Information—Dr. Karl B. King, Chairman; Dr. Ben R. Buford, Dr. Joseph Wolfe, Dr. T. Haynes Harvill, Dr. Murphy Bounds, and Dr. D. R. Sellers.

Scientific Exhibits—Dr. Joseph M. Hill, Chairman; Dr. Edward Sulkin, Dr. Ben J. Wilson, Dr. Jabez Galt, Dr. William H. Barekman, and Dr. Robert H. Millwee.

Hobby Exhibits—Dr. John S. Chapman, Chairman; Dr. Paul Williams, Dr. A. M. Reagan, Dr. Ruby K. Daniel, Dr. Robert S. Sparkman, Dr. Howard C. Coggeshall, and Dr. Arch J. McNeill.

Golf—Dr. J. H. McCracken, Jr., Chairman; Dr. S. M. Hill, Dr. Robert S. Sparkman, Dr. Harold A. O'Brien, Dr. R. B. McBride, Dr. Leon Hodges, Dr. Kelly Cox, and Dr. Harold G. Clark.

Trap Shooting—Dr. Arthur G. Schoch, Chairman, Dallas; Dr. Francis A. Garbade, Galveston; Dr. James H. Hook, Fort Worth, and Dr. D. D. Warren, Waco.

Women Physicians—Dr. May Agness Hopkins, Chairman; Dr. Nina Fay Calhoun, Dr. Minnie L. Maffett, Dr. Katherine P. Bennett, Dr. Viola P. Scanland, and Dr. Gladys J. Fashena.

Ladies' Entertainment—Mrs. Ridings E. Lee, General Chairman; Mrs. Cecil O. Patterson, General Co-Chairman; Mrs. Dennis O'Brien, Registration; Mrs. David W. Carter, Information and Pages; Mrs. Ramsay Moore, Courtesy; Mrs. J. W. Duckett, Decoration; Mrs. George A. Schenewerk, Hospitality House; Mrs. Truitt James, Publicity; and Mrs. Joe V. Moody, Telephone.

OFFICERS, SOUTHERN MEDICAL ASSOCIATION

President

Dr. Curtice Rosser ..... Dallas, Texas

President Elect

Dr. R. J. Wilkinson ..... Huntington, West Virginia

First Vice-President

Dr. Walter C. Jones ..... Miami, Florida

Second Vice-President

Dr. Edwin C. Ernst ..... St. Louis, Missouri

Secretary-Manager (Secretary, Treasurer and General Manager)

Mr. C. P. Loranz ..... Birmingham, Alabama

Assistant Secretary-Manager

Mr. Robert F. Butts ..... Birmingham, Alabama

Editor of Journal

Dr. M. Y. Dabney ..... Birmingham, Alabama

Assistant Editor of Journal

Mrs. Eugenia B. Dabney ..... Birmingham, Alabama

Associate Editors

Dr. Curtis J. Lund ..... New Orleans, Louisiana
Dr. Curtice Rosser ..... Dallas, Texas
Dr. Tinsley R. Harrison ..... Birmingham, Alabama

Councilors

Dr. F. A. Holden, Chairman ..... Baltimore, Maryland
Dr. R. L. Sanders, Vice-Chairman ..... Memphis, Tennessee
Dr. Wilbur M. Salter ..... Anniston, Alabama
Dr. Lowry H. McDaniel ..... Tyronza, Arkansas
Dr. Helen Gladys Kain ..... Washington, D. C.
Dr. C. A. Andrews ..... Tampa, Florida
Dr. Olin S. Cofer ..... Atlanta, Georgia
Dr. Clifford N. Heisel ..... Covington, Kentucky
Dr. Edwin H. Lawson ..... New Orleans, Louisiana
Dr. Lamar Arrington ..... Meridian, Mississippi
Dr. Daniel L. Sexton ..... St. Louis, Missouri
Dr. Lenox D. Baker ..... Durham, North Carolina
Dr. Fred E. Woodson ..... Tulsa, Oklahoma
Dr. W. Thomas Brockman ..... Greenville, South Carolina
Dr. Milford O. Rouse ..... Dallas, Texas
Dr. Waverly R. Payne ..... Newport News, Virginia
Dr. Andrew E. Amick ..... Lewisburg, West Virginia

Executive Committee of Council—Dr. F. A. Holden, Chairman; Dr. R. L. Sanders, Vice-Chairman; and Dr. Fred E. Woodson. Ex-officio members—Dr. Curtice Rosser and Dr. R. J. Wilkinson.

Councilors-Elect—Dr. J. Morris Reese, Baltimore, Maryland; Dr. Grayson Carroll, St. Louis, Missouri; and Dr. H. L. Brockmann, High Point, North Carolina.

Board of Trustees

(All are Past Presidents)

Dr. E. Vernon Mastin, Chairman ..... St. Louis, Missouri
Dr. M. Y. Dabney ..... Birmingham, Alabama
Dr. E. L. Henderson ..... Louisville, Kentucky
Dr. Lucien A. LeDoux ..... New Orleans, Louisiana
Dr. Oscar B. Hunter ..... Washington, D. C.
Dr. Hamilton W. McKay ..... Charlotte, North Carolina

PROGRAM, SOUTHERN MEDICAL ASSOCIATION

Forty-Fifth Annual Meeting, Dallas, Texas

November 5-8, 1951

PROGRAM

The opening assembly, general session, sections, allied and visiting associations, scientific exhibits and motion pictures, which compose the program for the Dallas meeting, are as follows, the complete preliminary program of each beginning on page 975.

Scientific Exhibits
Motion Pictures
Opening Assembly
General Session
Section on General Practice
Section on Medicine
Section on Gastroenterology
Section on Neurology and Psychiatry
Section on Pediatrics
Section on Pathology
College of American Pathologists, South Central and Southeastern Sections
Section on Radiology
Section on Dermatology and Syphilology
Section on Allergy
Section on Physical Medicine and Rehabilitation
Section on Industrial Medicine and Surgery
Section on Surgery
Section on Orthopedic and Traumatic Surgery
Section on Gynecology
Section on Obstetrics
Section on Urology
Section on Proctology
Section on Ophthalmology and Otolaryngology
Association for Research in Ophthalmology
Section on Anesthesiology
Section on Medical Education and Hospital Training
Section on Public Health
Inter-City Urological Society
American College of Chest Physicians, Southern Chapter
Woman's Auxiliary

WHO MAY ATTEND

All scientific activities, meetings and exhibits, at the Dallas meeting will be available to physicians who are members in good standing of their local and state medical societies. Those not members of the Southern Medical Association will show membership card evidencing membership in their local and state societies. All scientific meetings and exhibits will be available to residents, interns, senior and junior medical students, technicians and nurses. There is no registration fee at Southern Medical Association meetings.

DALLAS COUNTY MEDICAL SOCIETY

The Dallas County Medical Society is celebrating this year the 75th anniversary of its founding. This event took place on April 1, 1876, when a group of eighteen physicians met in the office of one of their number to form an organization which has grown to a membership of 780. It is very fitting therefore that the Southern Medical Association should hold its annual session in this city at this time.

The population of Dallas County is now more than 600,000 persons, a gain of over 50 per cent during the past ten years. During the past twenty years, the membership of the Dallas County Medical Society has more than doubled. The membership of the Dallas County Medical Society is larger than the membership of twelve state medical associations. The membership is equal in size to the average of twenty-two medical associations including the twelve. However, increases in numbers alone is not of itself a particularly great accomplishment.

Dallas is the location of a great medical school, Southwestern, a unit of the University of Texas, and outstanding hospitals. The physicians of Dallas County have helped to make these institutions outstanding. The members of the Society hope they will be able to be outstanding also in extending to the members of the Southern Medical Association the warm hospitality for which the great Southwest is noted.

The officers of the Society are: Dr. Charles L. Martin, President; Dr. Martin S. Buehler, Vice-President: Dr. W. W. Fowler, Secretary; Dr. J. B. Howell, Treasurer; and Mr. Millard J. Heath, Executive Secretary.

PRESIDENT'S NIGHT

Wednesday evening, November 7, will be President's Night, an evening of entertainment and good fellowship. There will be a dinner at the Baker Hotel, Crystal Ballroom, followed by an address by the President, Dr. Curtice Rosser, Dallas, Texas, entitled, "The Southern Doctor." Colonel Jack Major, the Kentucky Colonel from Paducah, "the man who makes you laugh," will give his noted humorous address, "Taxes, Women and Hogs." Following the addresses there will be a grand ball. Dr. Martin S. Buehler, Dallas, is Chairman of the Committee arranging for this evening of entertainment. Everyone is urged to attend.

WOMEN PHYSICIANS

The thirty-seventh annual meeting and dinner for the Women Physicians of the Southern Medical Association will be held at Dallas, Texas, Tuesday evening, November 6, at 7:00 p.m., at the Baker Hotel, private dining room number 5. Dr. M. Eleanor Cook, Lake Charles, Louisiana, Chairman of the Women Physicians of the Southern Medical Association, will preside.

Judge Sarah Hughes of the Fourteenth District Court, Dallas County, will speak on "For a World United in Peace."

A drive followed by a tea at the home of Dr. Nina Fay Calhoun has been arranged for all women physicians arriving in Dallas by Sunday noon (November 4).

Dr. May Agness Hopkins, Medical Arts Building, Dallas, is Chairman of the Committee for Women Physicians, and associated with her are Dr. Nina Fay Calhoun, Dr. Minnie L. Maffett, Dr. Katherine P. Bennett, Dr. Viola P. Scanland and Dr. Gladys J. Fashena. Women physicians planning to attend should notify Dr. Hopkins.

AFTER DALLAS, MEXICO

A number of physicians in the South have inquired about a trip to Mexico after the Dallas meeting. The Southern Medical Association is not in a position this year to handle an official trip to Mexico as it did following the San Antonio meeting in 1934.

There is in Dallas a very splendid touring service that handles tours to Mexico for groups and individuals. This touring service has good connections in Mexico. The Association has arranged for this travel service to handle tours for any who may wish to go to Mexico following the Dallas meeting. Anyone interested in a Mexico trip should contact Fred L. Haskett Travel Service, 211 North St. Paul Street, Dallas 1, Texas.

ALUMNI AND FRATERNITY REUNIONS

It is anticipated there will be a number of alumni and fraternity reunions, dinners and luncheons, at the Dallas meeting. At the time this program went to press, arrangements had been made for the following:

Emory University School of Medicine, Emory University, Georgia, Baker Hotel, Room 1, Tuesday evening, 7:00 p.m.

University of Tennessee Alumni, Memphis, Tennessee, Adolphus Hotel, Cactus Room, Tuesday evening, 7:00 p.m.

Phi Beta Pi Fraternity, Baker Hotel, Texas Room, Monday, November 5, 12:00 noon.

Phi Chi Fraternity, Baker Hotel, Room 1. Monday evening, November 5, 7:00 p.m.

GOLF TOURNAMENT

The twenty-eighth annual golf tournament for men of the Southern Medical Association will be held, weather permitting, at the Brook Hollow Country Club, Harry Hines Boulevard, Dallas, on Tuesday, November 6. Tournament play will consist of one eighteen hole round of medal play and entrants are privileged to play any time Tuesday. The score cards for the tournament round will be obtained from the Committee and turned in after the tournament round of play. Participants in the tournament must bring their certified handicaps from their respective clubs. Each golfer is requested to wear the official badge for identification when visiting the golf club. All golfers are urged to bring their own clubs, although a limited supply of excellent rental clubs is available. Although tournament play is limited to Tuesday, members may play any day during the meeting by paying the usual greens fee.

The three major trophies to be played for again this year, which must be won three times by the same golfer, are the *Daily Oklahoman* and *Times* Cup, in play since 1938, for low gross, junior class (physicians under 50 years of age); the Ralston Purina Cup, in play since 1935, for low gross, senior class (physicians over 50 years of age); and the *Dallas Morning News* Cup, in play since 1925, handicap for low net.

All participants in this golf tournament must be properly registered at the Southern Medical Association registration headquarters and have the official badge to be accorded the privilege of the Brook Hollow Country Club. Greens fee $3.00 each.

Dr. J. H. McCracken, Jr., 516 Medical Arts Building, Dallas, is Chairman of the Golf Committee, and associated with him are Dr. S. M. Hill, Dr. Robert S. Sparkman, Dr. Harold A. O'Brien, Dr. R. B. McBride, Dr. Leon Hodges, Dr. Kelly Cox and Dr. Harold G. Clark.

TRAP AND SKEET SHOOTING TOURNAMENT

The nineteenth annual trap and skeet shooting tournament of the Southern Medical Association, weather permitting, will be held on Wednesday, November 7, at 3:00 p.m. at the Dallas Gun Club, Carrollton, fifteen miles from downtown Dallas on Highway 77. $3.50 per round.

Here are the trophies for the shoot this year: The Mallinckrodt Chemical Works Bowl, high overall, 50 targets, 16-yard trap and first 50 target skeet; the Dr. Eugene K. Jaudon Trophy, handicap trap, 100 targets; and the Dr. Wm. B. Mell Trophy, highest score on 100 registered skeet targets. A shooter must win three legs on any one of these trophies to be his permanent property and, since no shooter has yet won three legs, these will be the trophies for the shoot this year.

Dr. Arthur G. Schoch, 1310 Medical Arts Building, Dallas, is Chairman of the Committee on Trap and Skeet Shooting, and associated with him are Dr. Francis A. Garbade, Galveston, Dr. James H. Hook, Fort Worth, and Dr. D. D. Warren, Waco. The Chairman requests that physicians interested in participating in the tournament this year please communicate directly with him prior to the meeting.

LUNCHEON CLUBS

The following luncheon clubs of Dallas extend a most cordial invitation to all members in attendance upon the Southern Medical Association meeting who are members of these clubs in their home city to have lunch with them:

MONDAY, November 5

South Dallas Lions Club, South Dallas Christian Church, 12:15 p.m.
Oak Cliff Rotary Club, Oak Cliff Chamber of Commerce Building, 12:15 p.m.

TUESDAY, November 6

Cliff Civitan Club, Oak Cliff Chamber of Commerce Building, 12:00 noon.
Park Cities Lions Club, Melrose Hotel, 12:15 p.m.
West Oak Cliff Lions Club, Torch Restaurant, 12:15 p.m.
East Dallas Rotary Club, Sammy's on Greenville Avenue, 12:15 p.m.
Kiwanis Club of Dallas, Adolphus Hotel, 12:15 p.m.

WEDNESDAY, November 7

Dallas Exchange Club, Adolphus Hotel, 12:00 noon.
Oak Cliff Exchange Club, Pig 'N Whistle Restaurant, 12:15 p.m.
Oak Cliff Lions Club, Oak Cliff Chamber of Commerce Building, 12:15 p.m.
Rotary Club of Dallas, Baker Hotel, 12:00 noon.
South Dallas Kiwanis Club, Ervay Street Methodist Church, 12:10 p.m.

THURSDAY, November 8

Dallas Civitan Club, Adolphus Hotel, 12:15 p.m.
East Dallas Kiwanis Club, Sammy's on Greenville Avenue, 12:00 noon.
East Dallas Exchange Club, Sammy's on Greenville Avenue.
Inwood Lions Club, El Chico Restaurant.
South Dallas Rotary Club, Ervay Street Methodist Church.
Dallas Optimist Club, Adolphus Hotel, 12:00 noon.
Exchange Club of North Dallas-Park Cities, Melrose Hotel.
Oak Cliff Kiwanis Club, Oak Cliff Chamber of Commerce, 12:09 p.m.

HOTELS

The local Executive Committee for the Dallas meeting has decided that no hotel will be designated as general hotel headquarters. All reservations will clear through the HOUSING BUREAU, Southern Medical Association Meeting, 433 Medical Arts Building, Dallas 1, Texas. In writing to the Bureau, one should give the type and price of accommodations desired, the names of those who will occupy the room or rooms requested, the day and time of arrival, and mode of transportation, whether via train, airlines or private automobile.

The Dallas meeting will be held on Monday, Tuesday, Wednesday and Thursday, November 5-8, the first session beginning at 10:00 a.m. Monday. Here follow the names of the hotels and motels that will furnish accommodations with the local address of each:

Dallas Hotels

ADOLPHUS, Commerce and Akard Streets; BAKER, Commerce and Akard Streets; CLIFF TOWERS, Zangs and Colorado Streets; CLIFFTON, 214 West Colorado Street; COTTON BOWL, 600 South Haskell; DALLAS ATHLETIC CLUB, Athletic Club Building; JEFFERSON, 312 South Houston Street; LAKEWOOD, 1818 Abrams Road; LAWN, 3718 Lemmon Avenue; LAWRENCE, 302 South Houston Street; LOMA ALTO, 4518 Lemmon Avenue; LYNN, 3405 Gaston Avenue; MAYFAIR, Ross at St. Paul Street; MELROSE, 3015 Oak Lawn Avenue; SOUTHLAND, 102 Murphy Street; STONELEIGH, 2927 Maple Avenue; TRAVIS, 1611 Canton Street; WHITE-PLAZA, 1933 Main Street; WHITMORE, 1019 Commerce Street.

Dallas Motels

ALAMO PLAZA, 700 Fort Worth Avenue; BELMONT MOTEL HOTEL, 901 Fort Worth Avenue; DALLASITE MOTEL, 4126 Central Expressway; EL RANCHO-TEL TOURIST COURT, 6131 Hines Boulevard; EL SOMBRERO, 7002 Harry Hines Boulevard; HIGHLAND MOTEL, 6805 Harry Hines Boulevard; LAST FRONTIER MOTEL, 1736 Fort Worth Avenue; LA TOURISTA COURTS, 6207 Harry Hines Boulevard; SKYLINE, 6833 Harry Hines Boulevard; MOTOR INN HOTEL OF DALLAS, Fort Worth Cut Off; SEVENTY-SEVEN RANCH TOURIST COURT, 2000 Lucas Drive; TOWER HOTEL COURTS, Hines Boulevard at the Circle; TOWN HOUSE TOURIST COURTS, 2914 Harry Hines Boulevard.

ASSOCIATION HEADQUARTERS

Registration, Information, Mail, Etc.

Adolphus Hotel, Grand Ballroom

The registration and information will be located at the Adolphus Hotel, Grand Ballroom and will open Monday, Tuesday, Wednesday and Thursday, November 5-8, at 8:00 a.m. and will close at 6:00 p.m. on Monday, Tuesday and Wednesday and at 2:00 p.m. on Thursday. Here will be issued badges and programs; and matters concerning dues, changes of address, errors, etc. will be given attention.

The Information Bureau and Convention Post Office will be in connection with Registration Bureau. Competent persons will be in charge to give any information or serve the physicians in any way possible. Ask anything you wish to know.

Be sure to register before attending the sessions.

Members of the Association are requested to bring their membership receipt (blue) card and present it when registering. This will greatly facilitate the registration.

EXCERPTS FROM THE BY-LAWS

Sec. 3. Except by special order, the order of exercises, papers and discussions as set forth in the official program will be followed from day to day until it has been completed, and all papers omitted will be recalled in regular order.

Sec. 4. No address or paper before the Association, or any of its sections, except the addresses of the President and Orators, shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than one time on any subject, provided each essayist be allowed ten minutes in which to close the discussion.

Sec. 5. All papers before the Association, or any of its sections, shall be the property of the Association. Each paper shall be deposited with the Secretary when read, or within ten days thereafter.

Sec. 6. No paper shall be published except upon recommendation of the Publication Committee, which shall consist of the Secretary as Chairman, with the Chairman and Secretary of each section as its constant members.

TECHNICAL EXHIBITS

At the Dallas meeting may be expected the highest type group of technical, sometimes called commercial, exhibits attended by a group of specialized and courteous representatives who are concerned only with being of service to those physicians attending the meeting.

A policy adopted twelve years ago for making the exhibits more worthwhile has been generally accepted by the various commercial houses, and personnel of the various booths will be found willing at every turn to keep the exhibits on a dignified plane.

The policy is concerned with (a) *selling*, (b) *samples* and (c) *souvenirs* and for clarification the following short explanation is given: (a) the atmosphere of the exhibit is to be that of show and demonstration and not of selling. Should a physician wish to purchase an item on display it is permissible for the exhibitor to take his order for the item either for delivery from the booth or to be sent later—the technical exhibits are for the benefit of the attending physician. (b) Samples and literature may be displayed within the exhibit and may be given out at the exhibit when the desire for them is indicated. It is permissible for those calling at exhibits to have their names taken for samples and literature to be sent from the home office of the exhibitor. (c) Souvenirs of any description cannot be given away at any exhibit or at any point in the hotels or meeting places.

The object is to make the Technical Exhibits more definitely a scientific and educational part of the Southern Medical Association meetings and therefore worth definitely more to attending physicians.

We urge you to visit the Technical Exhibits.

SCIENTIFIC EXHIBITS

Adolphus and Baker Hotels

Exhibits will be open Monday, Tuesday and Wednesday, November 5, 6 and 7 from 8:00 a.m. to 6:00 p.m. and on Thursday, November 8 from 8:00 a.m. to 2:00 p.m.

United States Air Force

UNITED STATES AIR FORCE MEDICAL SERVICE, Major General Harry G. Armstrong, Surgeon General, U. S. Air Force, Washington, D. C.: The Story of Air Force Medicine.

Medicine

DONALD B. ARMSTRONG, EARL C. BONNETT, LOUIS I. DUBLIN and HERBERT H. MARKS, Metropolitan Life Insurance Company, New York, N. Y.: Influence of Overweight on Health and Disease.

WILLIAM P. BOGER, WALTER V. MATTEUCCI, NELSON H. SCHIMMEL and HARRISON F. FLIPPIN, Philadelphia General Hospital, Philadelphia, Pa.: "Benemid": Its Influence on Pas, Penicillin, and other Antibiotics.

LOUIS L. FRIEDMAN, Birmingham, Ala.: Anthracosilicosis (Miner's Asthma).

AUGUSTUS GIBSON, CHARLES E. LYGHT, STEPHEN FROMER and LYON P. STREAN, Merck and Company, Inc., Rahway, N. J.: Cortisone: Examples from Its Therapeutic Spectrum.

JAMES M. RUEGSEGGER, FRANK B. ABLONDI, HENRY D. PIERSMA and SAMUEL R. HAWKINS, Lederle Laboratories Division, American Cyanamid Company, New York, N. Y.: Studies on Varidase (Streptokinase-Streptodornase).

Gastroenterology

DAVID CAYER and W. E. CORNATZER, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.: Lipotropic Factors in the Treatment of Liver Disease.

CECIL O. PATTERSON and MILFORD O. ROUSE, Southwestern Medical School of the University of Texas, Dallas, Tex.: Cancer of the Stomach.

Neurology and Psychiatry

THOMAS W. FARMER, LUDLOW M. PENCE and (Miss) MARIAN MOELLER, Southwestern Medical School of the University of Texas, Dallas, Tex.: Gross Brain Material.

BELA HALPERT and WILLIAM S. FIELDS, Veterans Administration Hospital and Baylor University College of Medicine, Houston, Tex.: Intracranial Neoplasms, Primary and Metastatic.

LEOPOLD HOFSTATTER, St. Louis State Hospital, St. Louis, Mo.: Management of the Institutional Epileptic.

AVERILL STOWELL and ROBERT HAYNE, Tulsa, Okla.: Selective Frontal Leukotomy: Use of Human Horseley Clark Apparatus.

ARNOLD H. UNGERMAN, MILFORD S. UNGERMAN and LEO M. LOWBEER, Hillcrest Memorial Hospital, Tulsa, Okla.: Palliative Treatment of Trifacial Neuralgia: Pathology of Tic Douloureux.

Pathology

HENRY W. EDMONDS, Armed Forces Institute of Pathology, Washington, D. C.: Metastatic Neoplasms of the Heart.

H. E. NIEBURGS and E. R. PUND, Medical College of Georgia, Augusta, Ga.: Etiologic Factors of Cervical Carcinoma and Hormone Therapy.

Radiology

EDWIN C. ERNST, Barnard Free Skin and Cancer Hospital and De Paul Hospital, St. Louis, Mo.: Newer Technics of Radiation Treatment of Carcinoma of the Cervix.

Dermatology

FRANCIS A. ELLIS, University of Maryland School of Medicine, Baltimore, Md., and ASHER A. FRIEDMAN, Norfolk, Va.: A Clinical and Pathologic Study of Erythema Annulare Centrifugum of Darier (Wende's Erytheme Figuratum Perstans).

Allergy

HERMANN BLATT, Cincinnati, O.: Identification of Specific Bacterial Allergens.

HENRY D. OGDEN, Louisiana State University School of Medicine, New Orleans, La.: Headache.

Surgery

LOUIS T. BYARS, K. B. COLDWATER and CHARLES ECKERT, Washington University School of Medicine, and Veterans Administration Hospital (Jefferson Barracks), St. Louis, Mo.: Tumors of the Parotid Gland: Surgical Anatomy, Pathology and Technic.

THOMAS D. CRONIN and ELLIOTT B. HAY, Baylor University College of Medicine, Houston, Tex.: Treatment of Burns.

ROBERT P. GLOVER and THOMAS J. E. O'NEILL, Hahnemann Medical College and Hospital, Philadelphia, Pa.: Intracardiac Surgery of Acquired and Congenital Heart Disease.

JAMES W. HENDRICK and GRANT E. WARD, San Antonio, Tex.: Diagnosis and Treatment of Tumors of the Head and Neck, except Brain.

ROY G. KLEPSER and JAMES F. BERRY, Georgetown University School of Medicine, Washington, D. C.: The Diagnosis and Surgical Treatment of Chylothorax.

WALDEMAR R. METZ, CARL N. WAHL and JEROME R. KLINGBEIL, Louisiana State University School of Medicine, New Orleans, La.: Some Technics in Plastic Surgery.

I. C. MIDDLEMAN, E. LAWRENCE KEYES and PHILLIP A. CONRATH, St. Louis University School of Medicine, St. Louis, Mo.: Exclusion Operation for Small Bowel Fistula.

DONALD L. MISHLER, Tulsa, Okla.: Plastic Surgery of the Nose.

JACOB J. WEINSTEIN, George Washington University School of Medicine and Gallinger Municipal Hospital, Washington, D. C.: Parenteral Invert Sugar.

Orthopedics

J. R. GARNER, Atlanta, Ga.: Postural Backaches.

IAN MACKENZIE, Hillcrest Memorial Hospital, Tulsa, Okla.: Polio Department in a General Hospital: Five Year Statistical Revue.

WILLIAM K. MASSIE and OWEN B. MURPHY, Lexington, Ky.: Operative Treatment of Fractures Designed to Promote Early Functional Recovery.

DANA M. STREET, F. JAMES FUNK and JOSEPH M. YOUNG, Kennedy Veterans Administration Hospital, Memphis, Tenn.: Tumor Metastasis to the Lumbar Spine.

Obstetrics and Gynecology

S. BAMFORD and H. E. NIEBURGS, Medical College of Georgia, Augusta, Ga.: Cytodiagnostic Problems of Preinvasive Carcinoma of the Cervix Uteri: The Preinvasive Cancer Cell Group.

WILLIAM BICKERS, Richmond, Va.: Depot Estrogen.

RICHARD H. FISCHER and STANLEY P. McCOLGAN, Research Foundation, Doctor's Hospital, Washington, D. C.: Pregnanediol Excretion in the Menstrual Cycle.

ARCHIBALD PERRIN HUDGINS, Charleston, W. Va.: Postoperative Perineal Pain.

KARL JOHN KARNAKY, Baylor University College of Medicine, and Jefferson Davis Hospital, Houston, Tex.: Practical Office Gynecology.

RICHARD A. STREET, JR., Vicksburg, Miss.: Pathology of Abnormal Uterine Bleeding.

Urology

ARTHUR J. BUTT and JOSEPH Q. PERRY, Pensacola, Fla.; ERNST A. HAUSER, Massachusetts Institute of Technology, Cambridge, Mass.; JOSEPH SEIFTER, Wyeth Institute of Applied Biochemistry, Philadelphia, Pa.: Treatment and Prevention of Kidney Stones by Increasing Protective Urinary Colloids with Hyaluronidase.

MAJOR EVAN L. LEWIS, CAPT. ROBERT E. CROMPTON, and COL. JAMES C. KIMBROUGH, Medical Corps, U. S. Army, Walter Reed Army Hospital, Washington, D. C.: Megaloureter: New Concepts.

KEN MOONEY, Parkland Hospital, Dallas, Tex.: Abacterial Pyuria.

MICHAEL K. O'HEERON, Baylor University College of Medicine, Houston, Tex.: Cystoscopic Extraction of Ureteral Calculi.

Ophthalmology and Otolaryngology

LUCIAN W. ALEXANDER, Tulane University School of Medicine, New Orleans, La.: Differential Diagnosis of Deafness and Stages of the Fenestration Operation.

COL. VICTOR A. BYRNES, School of Aviation Medicine, U. S. Air Force, Randolph Field, Tex.: Statistical Illustrations for Ophthalmological Presentations.

FRED R. GUILFORD, WILLIAM K. WRIGHT and C. O. HAUG, University of Texas Medical Branch, Galveston, Tex.: Therapy of Deafness and Related Otologic Surgery.

NATHANIEL M. LEVIN, Jackson Memorial Hospital, Miami, Fla.: (1) Total Laryngectomy and (2) Speech Rehabilitation Following Total Laryngectomy.

ROBERT E. RYAN, St. Louis, Mo.: Headache: Diagnosis and Treatment.

Anesthesiology

LLOYD D. SEAGER, EDWIN L. RUSHIA, University of Arkansas School of Medicine, Little Rock, Ark.: Curara Antidotes: The Anticurara Action of Some Neostigmine Derivatives.

Public Health

BACON FIELD CHOW, School of Hygiene and Public Health, Johns Hopkins University School of Medicine, Baltimore, Md.: The Absorption and Utilization of Vitamin B_{12}.

Research

THOMAS G. HULL, American Medical Association, Chicago, Ill.: Animals in Research.

Technologists

The American Society of Medical Technologists, Houston, Tex.: Activities of The American Society of Medical Technologists.

MOTION PICTURES

Baker Hotel, Room 3

There will be a motion picture program on Tuesday and Wednesday, November 6 and 7, from 9:00 a.m. to 5:30 p.m. In the Official Program for use at the meeting the time the films will be run will be given. There will be a voluntary period each day during which any film on the program may be run upon request.

LUCIAN W. ALEXANDER, Tulane University School of Medicine, New Orleans, La.: Fenestration Operation.

DONALD B. ARMSTRONG, Metropolitan Life Insurance Company, New York, N. Y.: Losing to Win.

ALSTON CALLAHAN, Medical College of Alabama, Birmingham, Ala.: Construction of a Socket, Lids and Eyebrow.

GRAYSON CARROLL, St. Louis University School of Medicine, St. Louis, Mo.: Urinary Infections: Bacteriology, Pathology and Treatment.

RAY K. DAILY and LOUIS DAILY, JR., Jefferson Davis Hospital, Houston, Tex.: Glaucoma Operations.

H. G. KOBRAK, Doho Chemical Corporation, New York, N. Y.: The Inner Ear.

HARRY M. GILKEY, Diabetic Society of Kansas City, Kansas City, Mo.: A Diabetic Children's Camp.

HARRY R. GRAU, Daytona Beach, Fla.: Skin Grafting of Extensive Burns.

A. H. HOLLAND, JR., and R. J. MEYER, The Armour Laboratories, Chicago, Ill.: Tryptar (Highly Purified Crystalline Trypsin): Physiologic Debridement.

C. E. IRWIN and Staff, Warm Springs Foundation, Warm Springs, Ga.: Poliomyelitis: Surgical Rehabilitation of the Thumb and Index Finger.

C. GORDON JOHNSON, Tulane University School of Medicine, New Orleans, La.: Vaginal Hysterectomy and Perineorrhaphy.

KARL JOHN KARNAKY, Baylor University College of Medicine, and Jefferson Davis Hospital, Houston, Tex.: Detection of Cancer by Vaginal and Cervical Smears.

NATHANIEL M. LEVIN, Jackson Memorial Hospital, Miami, Fla.: (1) Total Laryngectomy, and (2) Speech Rehabilitation Following Radical Laryngectomy.

PRESTON A. McLENDON and JOHN PARKS, George Washington University School of Medicine, Washington, D. C.: A Concept of Maternal and Neonatal Care.

H. E. NIEBURGS, E. R. PUND and S. BAMFORD, Medical College of Georgia, Augusta, Ga.: Cytodiagnostic Problems in Carcinoma of the Cervix and Fundus Uteri.

JOHN D. BROWNING, Lederle Laboratories Division, American Cyanamid Company, New York, N. Y.: Aureomycin: The Versatile Antibiotic.

DANA M. STREET, Kennedy Veterans Administration Hospital, Memphis, Tenn.: Medullary Nailing of Fractured Femur.

OPENING ASSEMBLY

Monday, November 5, 10:30 a.m.

Baker Hotel, Crystal Ballroom

Frank A. Selecman, General Chairman, Dallas, presiding

Invocation, REV. ROBERT E. GOODRICH, D.D., Pastor, First Methodist Church, Dallas.

Address of Welcome, CHARLES L. MARTIN, President, Dallas County Medical Society, Dallas.

Address of Welcome, ALLEN T. STEWART, President, Texas Medical Association, Lubbock, Tex.

Response to Address of Welcome, ELMER L. HENDERSON, Past President, Southern Medical Association, and Immediate Past President, American Medical Association, and the World Medical Association, Louisville, Ky.

Introduction of Dr. Curtice Rosser, President, Southern Medical Association, Dallas.

Introduction of Guests.

Address: "A Layman Views the Medical Scene," HUMPHREY LEE, Ph.D., President, Southern Methodist University, Dallas.

Address: "The Problems Confronting Medicine in the Immediate Future," JOHN W. CLINE, President, American Medical Association, and Associate Clinical Professor of Surgery, Stanford University School of Medicine, San Francisco, Calif.

Adjournment.

GENERAL SESSION

Thursday, November 8, 1:15 p.m.

Baker Hotel, Texas Room

Curtice Rosser, President, Dallas, presiding.

Call to order.

Report of Council, F. A. Holden, Chairman, Baltimore, Md.

Report of Nominating Committee, F. A. Holden, Chairman, Baltimore, Md.

Election of Officers.

Installation of Incoming President, R. J. Wilkinson, Huntington, W. Va.

Presentation of Past President's Medal to Curtice Rosser, Dallas, Texas, by F. A. Holden, Chairman of the Council, Baltimore, Md.

Adjournment.

SECTION ON GENERAL PRACTICE

Adolphus Hotel, Parlor A

Officers

Chairman—W. H. Anderson, Booneville, Miss.
Vice-Chairman—J. O. S. Holt, Jr., Dallas, Tex.
Secretary—Fount Richardson, Fayetteville, Ark.

Hosts from the Dallas County Medical Society—W. LeRoy Baird, E. R. Cox, Guy Denton, Jr., and J. O. S. Holt, Jr.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Wednesday, November 7, 2:00 p.m.

Adolphus Hotel, Parlor A

1. Chairman's Address: "Today's Challenge to Medicine," W. H. ANDERSON, Booneville, Miss.

2. "Iatric Disorders" (Lantern Slides), E. G. WAKEFIELD, Associate Professor of Internal Medicine, University of Minnesota Graduate School of Medicine, Rochester, Minn.

3. "Further Observations on Cortisone and ACTH as Therapeutic Agents" (Lantern Slides), ROBERT E. STONE, Associate Director, and TOM D. SPIES, Director, Nutrition Clinic, Hillman Hospital, Birmingham, Ala., and Professor and Head of the Department of Nutrition and Metabolism, Northwestern University Medical School, Chicago, Ill.

   Discussion opened by Arild E. Hansen, Professor of Pediatrics, University of Texas Medical Branch, Galveston, Tex.; Euclid M. Smith, Hot Springs, Associate Professor of Medicine (Rheumatology), University of Arkansas School of Medicine, Little Rock, Ark.

Intermission

4. "Current Aspect of Peptic Ulcer Therapy as Applied to General Practice" (Lantern Slides), JAMES F. CRENSHAW, Birmingham, Ala.

   Discussion opened by George M. Underwood, Clinical Associate Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.

5. "Facial Lesions of Interest to the General Practitioner," WILLIAM MILTON ADAMS and JAMES H. HENDRIX, JR., Memphis, Tenn.

   Discussion opened by James T. Mills, Clinical Professor of Plastic Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

6. "Static Backaches," JAMES R. GARNER, Atlanta, Ga.

   Discussion opened by Stanley A. Hill, Corinth, Miss.

7. "Diethylstilbestrol for Menstrual Disorders and Endometriosis," KARL JOHN KARNAKY, Assistant Professor of Clinical Gynecology, Baylor University College of Medicine, Houston, Tex.

   Discussion opened by Lee F. Turlington, Birmingham, Ala.

Thursday, November 8, 2:00 p.m.

Adolphus Hotel, Parlor A

8. "Office Procedures in Anesthesia," JOHN W. WINTER, San Antonio, Tex.

   Discussion opened by Fred E. Woodson, Tulsa, Okla.

9. "Surgical Training for the General Practitioner," RANDOLPH T. SMITH, Professor of Surgery, University of Arkansas School of Medicine, Little Rock, Ark.

   Discussion opened by W. J. Fetzer, San Antonio, Tex.

10. "The Role of the General Practitioner in Community Medical Service," J. P. SANDERS, President, American Academy of General Practice, Shreveport, La.

Intermission

11. "Bleeding from the Gastrointestinal Tract" (Lantern Slides), VINCENT W. ARCHER, Professor of Roentgenology, University of Virginia Department of Medicine, Charlottesville, Va.

    Discussion opened by J. Cash King, Memphis, Tenn.

12. "The Coxsackie Viruses: Properties, Immunological Aspects and Possible Role in Human Disease" (Lantern Slides), S. EDWARD SULKIN, Professor of Bacteriology, Southwestern Medical School of the University of Texas, Dallas, Tex.

    Discussion opened by Thomas W. Farmer, Dallas, Tex.

Election of Officers.

SECTION ON MEDICINE

Adolphus Hotel, Parlor A

Officers

Chairman—Harold M. Horack, New Orleans, La.
Vice-Chairman—Tom D. Spies, Birmingham, Ala.
Secretary—Vince Moseley, Charleston, S. C.

Hosts from the Dallas County Medical Society—Robert M. Barton, Richard A. Dathe, D. C. McBride and John S. Minnett.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 9:00 a.m.

Adolphus Hotel, Parlor A

1. Chairman's Address: "Aids in the Diagnosis of Posterior Myocardial Infarcts: The Effect of Deep Inspiration of Q_3T_3 Patterns," HAROLD M. HORACK, New Orleans, La.

2. "Remarks on Treatment of Complications of Diabetes Mellitus with Special Reference to Insulin Allergy" (Lantern Slides), ARTHUR A. HEROLD, SR., Shreveport, La.

   Discussion opened by David W. Carter, Jr., Clinical Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.; Seale Harris, Birmingham, Ala.

3. "Salt Depletion Syndrome," HOWARD L. HOLLEY, Associate Professor of Medicine, Medical College of Alabama, Birmingham, Ala.

   Discussion opened by George F. Schmitt, Miami, Fla.

Intermission

4. "Anthracosilicosis (Miner's Asthma)" (Lantern Slides and Scientific Exhibit), LOUIS L. FRIEDMAN, Birmingham, Ala.

   Discussion opened by John S. Chapman, Clinical Assistant Professor of Medicine, Southwestern Medical College of the University of Texas, Dallas, Tex.; Edgar Hull, Professor of Medicine, Louisiana State University School of Medicine, New Orleans, La.

5. "Therapy of Heart Failure" (Lantern Slides), GEORGE F. SCHMITT, Miami, Fla.

   Discussion opened by John A. Boone, Associate Professor of Medicine, Medical College of the State of South Carolina, Charleston, S. C.

6. "The Diagnosis and Treatment of Chronic Amebiasis" (Lantern Slides), RYLE RADKE, Col., Medical Corps, U. S. Army, Fort Knox, Ky.

   Discussion opened by Douglas H. Sprunt, Professor of Pathology and Bacteriology, University of Tennessee College of

Medicine, Memphis, Tenn.; David Cayer, Associate Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.; Julian M. Ruffin, Associate Professor of Medicine, Duke University School of Medicine, Durham, N. C.

Wednesday, November 7, 9:00 a.m.

Adolphus Hotel, Parlor A

7. "Resin Therapy in the Management of Chronic Congestive Heart Failure" (Lantern Slides), CARL M. VOYLES, JR. and E. S. ORGAIN, Associate Professor of Medicine, Durham, N. C.

   Discussion opened by Howard L. Holley, Associate Professor of Medicine, Medical College of Alabama, Birmingham, Ala.

8. "The Problem of Sensitization from Topical Therapeutic Agents," SIDNEY PRYSTOWSKY, Associate in Medicine, Medical College of the State of South Carolina, Charleston, S. C.

   Discussion opened by Arthur A. Herold, Sr., Shreveport, La.

9. "Cardiac Catheterization in Cardiopulmonary Disease" (Lantern Slides), JOHN A. BOONE, Professor of Medicine, Medical College of the State of South Carolina, Charleston, S. C.

   Discussion opened by Alfred W. Harris, Clinical Associate Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.

Intermission

10. "Rheumatoid Spondylitis" (Lantern Slides), A. H. CRENSHAW and J. F. HAMILTON, Associate Professor of Medicine, University of Tennessee College of Medicine, Memphis, Tenn.

    Discussion opened by I. L. Van Zandt, Fort Worth, Tex.; H. H. Brindley, Temple, Tex.

11. "Myxedema" (Lantern Slides and Motion Pictures), GEORGE T. HARRELL, Professor of Internal Medicine, Bowman-Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

12. "Hematological Effects of Uremia" (Lantern Slides), WILLIAM C. LEVIN, Associate Professor of Medicine, and LLOYD GREGORY, Resident in Medicine, University of Texas Medical Branch, Galveston, Tex.

    Discussion opened by William Arrowsmith, New Orleans, La.; E. E. Muirhead, Dallas, Tex.

Thursday, November 8, 9:00 a.m.

Adolphus Hotel, Parlor A

13. "The Lifetime Weight Curve and Coronary Artery Disease" (Lantern Slides), HOWARD E. HEYER, Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.

    Discussion opened by Robert M. Burton, Dallas, Tex.; Martin S. Buehler, Dallas, Tex.

14. "Two Years' Experience in the Treatment of Amebiasis with Aureomycin" (Lantern Slides), LEON V. McVAY, JR., Assistant Professor of Medicine, and DOUGLAS H. SPRUNT, Professor of Pathology and Bacteriology, University of Tennessee College of Medicine, Memphis, Tenn.

    Discussion opened by David Cayer, Associate Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.; Julian M. Ruffin, Associate Professor of Medicine, Duke University School of Medicine, Durham, N. C.; Ryle Radke, Col., Medical Corps, U. S. Army, Fort Knox, Ky.

15. "The Practical Utilization of Liver Function Tests" (Lantern Slides), DAVID JAMES, Emory University, Ga.

    Discussion opened by Oscar B. Hunter, Jr., Washington, D. C.

Intermission

16. "Infarction of the Lung" (Lantern Slides), JOHN S. CHAPMAN, Clinical Associate Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.

    Discussion opened by Jerry E. Miller, Associate Professor of Radiology, Southwestern Medical School of the University of Texas, Dallas, Tex.

17. "The Management of Spontaneous Thrombo-Embolic Disease" (Lantern Slides), ARTHUR M. FREEMAN, Assistant Professor of Medicine, Medical College of Alabama, Birmingham, Ala.

    Discussion opened by Arthur I. Chenoweth, Assistant Professor of Surgery, Medical College of Alabama, Birmingham, Ala.

18. "Etiology and Treatment of Hepatic Coma" (Lantern Slides), ROBERT A. WISE, Chief of Medical Service, Veterans Administration Hospital, and Associate Professor of Medicine, Baylor University College of Medicine, Houston, Tex.

    Discussion opened by M. D. Levy, Sr., Professor of Clinical Medicine, Baylor University College of Medicine, Houston, Tex.; W. A. Sodeman, The Wm. Henderson Professor of Preventive Tropical and Semi-Tropical Disease and Hygiene, Tulane University School of Medicine, New Orleans, La.; Ben Friedman, Chief of Medicine, Veterans Administration Hospital, McKinney, Tex.

Election of Officers.

SECTION ON GASTROENTEROLOGY

Mercantile National Bank Building, Auditorium

Officers

Chairman—Jerome S. Levy, Little Rock, Ark.
Vice-Chairman—Milford O. Rouse, Dallas, Tex.
Secretary—David Cayer, Winston-Salem, N. C.

Hosts from the Dallas County Medical Society—Tate Miller, Cecil O. Patterson, Lawrence B. Sheldon and George M. Underwood.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 2:00 p.m.

Mercantile National Bank Building, Auditorium

1. "The Significance of the Prepyloric Lesion" (Lantern Slides), CHARLES M. CARAVATI, Assistant Professor of Clinical Medicine, JAMES M. McMILLAN, Associate in Medicine, Medical College of Virginia, Richmond, Va., and T. R. HOOD, Smithfield, N. C.

   Discussion opened by George M. Underwood, Clinical Associate Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.; E. J. Lefeber, Galveston, Tex.; Walter R. Johnson, Asheville, N. C.

2. "The Value of Gastroscopy to the Gastroenterologic Internist" (Lantern Slides), TIM J. MANSON, Chattanooga, Tenn.

   Discussion opened by John S. Atwater, Atlanta, Ga.; Ernest Leonard Posey, Jr., Jackson, Miss.

3. Chairman's Address: "The Use of Protein Hydrolysates in the Therapy of Peptic Ulcer," JEROME S. LEVY, Professor of Medicine in charge of Gastroenterology, University of Arkansas School of Medicine, Little Rock, Ark.

Intermission

4. "Resin Induced Diuresis in Cirrhotic Ascites," GORDON McHARDY, Assistant Professor of Clinical Medicine, and JOHN BECHTOLD, Instructor, Department of Medicine, Tulane University School of Medicine, New Orleans, La.

   Discussion opened by Arthur Grollman, Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.; William D. Davis, New Orleans, La.

5. "Iodine Tagged Albumin Studies in Patients with Cirrhosis," MALCOLM TYOR, Fellow in Medicine, and DAVID CAYER, Associate Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

   Discussion opened by Jerry K. Aikawa, Instructor, Department of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

6. "Obscure Sources of Gastrointestinal Bleeding as Causes of Chronic Recurrent Anemia," EDWIN W. EDWARDS, New Orleans, La.

   Discussion opened by Charles L. Spurr, Assistant Professor, Baylor University College of Medicine, Houston, Tex.; Ben B. Wells, Professor of Medicine, University of Arkansas School of Medicine, Little Rock, Ark.

Tuesday, November 6, 2:00 p.m.

Mercantile National Bank Building, Auditorium

7. "Esophageal Tamponade in the Control of Bleeding Varices" (Lantern Slides), BRUCE KENAMORE, Assistant Professor of Clinical Medicine, Washington University School of Medicine, St. Louis, Mo.

   Discussion opened by Cecil O. Patterson, Dallas, Tex.; John Tilden Howard, Baltimore, Md.

8. "Preliminary Report Concerning an Improved Method of Enteral Feeding," JOHN ELLIOTT, Director, Medical Research Foundation of Dade County, DONALD W. SMITH, JAMES J. GRIFFITS and ROBERT M. LEE, Miami, Fla.

   Discussion opened by Donald F. Marion, Miami, Fla.; Robert Elman, Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Mo.

9. "The Treatment of Massive Gastric Hemorrhage Due to Gastro-Duodenal Lesions," A. H. AARON, Clinical Professor of Medicine, University of Buffalo School of Medicine, WILLIAM F. LIPP, M. H. LIPSITZ and ELMER MILCH, Buffalo, N. Y.

Intermission

10. "The Role of Banthine in the Management of Peptic Ulcer" (Lantern Slides), A. C. BRODERS, JR., Temple, Tex.

11. "A Clinical Evaluation of the Results in the Treatment of Peptic Ulcer with Banthine," CLARENCE W. LEGERTON, Instructor in Medicine, Duke University School of Medicine, Durham, N. C.

    Discussion on papers Nos. 10 and 11 opened by Tate Miller, Clinical Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.; Gordon McHardy, New Orleans, La.; Julian M. Ruffin, Professor of Medicine, Duke University School of Medicine, Durham, N. C.

12. "Potassium Deficiency in Gastrointestinal Diseases," BURTON A. SCHATZ and T. E. WEICHSELBAUM, St. Louis, Mo.

    Discussion opened by George T. Harrell, Professor of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

Tuesday, November 6, 6:30 p.m.

Baker Hotel, Texas Room

Gastroenterology Dinner. All physicians interested in gastroenterology are most cordially invited. Mr. Boyce House, Dallas, Texas, will give his address, "Remarkable Remarks."

SECTION ON NEUROLOGY AND PSYCHIATRY

Baker Hotel, Room 4

Officers

Chairman—Sullivan G. Bedell, Jacksonville, Fla.
Vice-Chairman—R. Eustace Semmes, Memphis, Tenn.
Secretary—George S. Fultz, Jr., Richmond, Va.

Hosts from the Dallas County Medical Society—Charles L. Bloss, Howard M. Burkett, Francis T. Harrington and William P. Shelton.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 2:00 p.m.

Baker Hotel, Room 4

1. Chairman's Address: "A County Cares for Its Psychotics," SULLIVAN G. BEDELL, Jacksonville, Fla.

2. "Intracerebral Hematomas: 106 Verified Cases," GUY L. ODOM, Assistant Professor of Neurosurgery, BYRON M. BLOOR and BARNES WOODHALL, Associate Professor of Surgery (Neurosurgery) Duke University School of Medicine, Durham, N. C.

   Discussion opened by William S. Fields, Houston, Tex.

3. "A Method of Treatment of the Symptoms of Conversion Hysteria," JACKSON A. SMITH, Houston, Tex.

   Discussion opened by R. Milton Finney, Associate Professor of Clinical Psychiatry, Baylor University College of Medicine, Houston, Tex.

Intermission

4. "Localization of Intracranial Neoplasms with Radioactive Diiodofluorescein" (Lantern Slides), ROBERT DEAN WOOLSEY, Instructor in Surgery, GEORGE E. THOMA (United States Air Force), Formerly Director Radioisotopes Laboratory, and ROBERT E. MACK, Resident in Internal Medicine and Director, Radioisotopes Laboratory, St. Louis University School of Medicine, St. Louis, Mo.

   Discussion opened by Willard Weary, Dallas, Tex.

5. "The Responsibilities and Facilities Available in a Private Neuropsychiatic Hospital to the Medical Profession," ARTHUR J. SCHWENKENBERG, Clinical Assistant Professor of Neuropsychiatry, Southwestern Medical School of the University of Texas, JOSEPH L. KNAPP and JOHN C. POWELL, JR., Dallas, Tex.

   Discussion opened by Howard R. Masters, Associate Professor of Neurosurgery, Medical College of Virginia, Richmond, Va.

6. "The Results of Superior Cervical Sympathectomy and Carotid Jugular Anastomosis in Atrophy of the Brain," AVERILL STOWELL and ROBERT A. HAYNE, Tulsa, Okla.

   Discussion opened by Jack I. Woolf, Dallas, Tex.

Tuesday, November 6, 2:00 p.m.

Baker Hotel, Room 4

7. "Electrodynamic Field Theory in Psychiatry" (Lantern Slides), LEONARD J. RAVITZ, Instructor, Department of Neuropsychiatry, Duke University School of Medicine, Durham, N. C.

   Discussion opened by Warren T. Brown, Associate Dean and Professor of Neuropsychiatry, Baylor University College of Medicine, Houston, Tex.

8. "Sclerodermal Muscular Atrophy, Clinical Considerations" (Lantern Slides), PAUL M. LEVIN, Clinical Assistant Professor of Neuropsychiatry, Southwestern Medical School of the University of Texas, Dallas, Tex.

   Discussion opened by Jesse B. Shelmire, Professor of Dermatology and Syphilology, Southwestern Medical School of the University of Texas, Dallas, Tex.

Intermission

SYMPOSIUM ON PSYCHOSURGERY

R. Eustace Semmes, Memphis, Tenn., Moderator.

9. "Relief of Pain by Supra-Orbital Leukotomy," C. E. PATTERSON, Associate Professor of Neurosurgery, and C. C. NASH, Clinical Assistant Professor of Neurosurgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

   Discussion opened by Joseph L. Knapp, Dallas, Tex.

10. "Some Comparisons of the Effects of Total and Bi-Medial Leukotomy" (Motion Pictures), R. BURKE SUITT, Duke University School of Medicine, Durham, N. C., and L. G. SEWALL, H. P. MORGAN, E. M. CAFFEY, E. N. WEAVER, A. E. RAUH and BURKE SMITH, Lobotomy Committee, Veterans Administration Hospital, Roanoke, Va.

    Discussion opened by Walter Freeman, Professor of Neurology, George Washington University School of Medicine, Washington, D. C.

11. "Role of Lobotomy in Psychiatric Management," DAVID C. WILSON, Professor of Psychiatry and Neurology, University of Virginia Department of Medicine, Charlottesville, Va.

    Discussion opened by Titus H. Harris, Professor of Neurology and Psychiatry, University of Texas Medical Branch, Galveston, Tex.

12. "Results of Lobotomy in Mental Disorders" (Lantern Slides), J. G. LYERLY, Jacksonville, Fla.

    Discussion opened by Everett G. Grantham, Assistant Clinical Professor of Surgery, University of Louisville School of Medicine, Louisville, Ky.

13. "Working Ability after Lobotomy," JAMES W. WATTS, Professor of Neurosurgery, George Washington University School of Medicine, Washington, D. C.

    Discussion opened by Leslie B. Hohman, Professor of Neuropsychiatry, Duke University School of Medicine, Durham, N. C.

SECTION ON PEDIATRICS

Officers

Chairman—William A. Reilly, Little Rock, Ark.
Vice-Chairman—Lamar Arrington, Meridian, Miss.
Secretary—James G. Hughes, Memphis, Tenn.

Hosts from the Dallas County Medical Society—John E. Ashby, O. Rene Caillet, Gordon B. McFarland and Floyd A. Norman.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 9:00 a.m.

Children's Medical Center, 2306 Welborn Street

Presentation of a series of clinical pediatric cases at the Children's Medical Center. Dr. Gilbert Forbes, Professor of Pediatrics, Southwestern Medical School of the University of Texas, in charge.

Wednesday, November 7, 9:00 a.m.

Baker Hotel, Texas Room

1. "Primary Atypical Pneumonia in Childhood," GEORGE R. RUSSELL, WALTER E. BROWN and W. A. BETTS, Tulsa, Okla.

   Discussion opened by Allan P. Bloxsom, Houston, Tex.; Edward M. Wier, Fort Worth, Tex.

2. "Life Cycle of the Allergic Individual," CARROLL M. POUNDERS, Professor of Pediatrics, University of Oklahoma School of Medicine, Oklahoma City, Okla.

   Discussion opened by Ralph Bowen, Houston, Tex.; Walker L. Rucks, Memphis, Tenn.

3. "New Horizons in the Rheumatic Fever Problem" (Lantern Slides), ARILD E. HANSEN, Professor of Pediatrics, University of Texas Medical Branch, Galveston, Tex.

Intermission

4. "Practical Application of Principles in Fluid Balance Therapy" (Lantern Slides), ALBERT M. HAND, Texarkana, Ark., Clinical Instructor, University of Arkansas School of Medicine, Little Rock, Ark., and Clinical Assistant, Southwestern Medical School of the University of Texas, Dallas, Tex.

   Discussion opened by Gilbert Forbes, Professor of Pediatrics, Southwestern Medical School of the University of Texas, Dallas, Tex.

5. "Respiratory Acidosis and Alkalosis" (Lantern Slides), FONTAINE S. HILL, Instructor in Pediatrics, University of Tennessee College of Medicine, Memphis, Tenn.

Thursday, November 8, 9:00 a.m.

Baker Hotel, Texas Room

6. "Congenital Dysplasia of the Hip in Early Infancy" (Lantern Slides), RICHARD D. HAWKINS, Biloxi, Miss.

7. "Medical Management of Osteomyelitis in Childhood" (Lantern Slides), BLAIR E. BATSON, Instructor, Department of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn.

   Discussion opened by Bedford F. Boylston, Houston, Tex.

8. Chairman's Address: "Treatment of Obesity in Children," WILLIAM A. REILLY, Professor and Head of Pediatrics Department, University of Arkansas School of Medicine, Little Rock, Ark.

Intermission

9. "Rooming-In: Modern Medicine Goes Old Fashioned," FRANK HOWARD RICHARDSON, Black Mountain and Asheville, N. C.

   Discussion opened by Preston A. McLendon, Washington, D. C.

10. "A Concept of Maternal and Neonatal Care" (Motion Pictures), PRESTON A. McLENDON, Professor of Pediatrics, George Washington University School of Medicine, Washington, D. C.

    Election of Officers.

SECTION ON PATHOLOGY

Dallas Power and Light Company Building, Auditorium

Officers

Chairman—J. F. A. McManus, Charlottesville, Va.
Vice-Chairman—Paul Kimmelstiel, Charlotte, N. C.
Secretary—H. R. Pratt-Thomas, Charleston, S. C.

Hosts from the Dallas County Medical Society—Marvin D. Bell, Charles F. Carter, John L. Goforth and E. E. Muirhead.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 2:00 p.m.

Dallas Power and Light Company Building, Auditorium

1. Chairman's Address: "The Histochemical Approach to Pathology" (Lantern Slides), J. F. A. McMANUS, Associate Professor of Pathology, University of Virginia Department of Medicine, Charlottesville, Va.

2. "A Consideration of the Pathogenesis of the Crisis of Sickle Cell Anemia" (Lantern Slides), ALICE L. SMITH, Assistant Professor of Pathology, and E. E. MUIRHEAD, Professor and Chairman of Department of Pathology, Southwestern Medical School of the University of Texas, Dallas, Tex.

3. "A Consideration of Cardiac Hypertrophy in Sickle Cell Anemia" (Lantern Slides), VERNIE A. STEMBRIDGE, Resident in Pathology, and R. H. RIGDON, Professor of Pathology, University of Texas Medical Branch, Galveston, Tex.

4. "Squamous Papilloma of the Cervix Uteri" (Lantern Slides), JOHN L. GOFORTH, Dallas, Tex.

Intermission

5. "The Pituitary Regulation of ACTH Production, Stimulation and Inhibition" (Lantern Slides), H. E. NIEBURGS, Director, Department of Clinical Cytology, Medical College of Georgia, Augusta, Ga.

6. "Comparative Pathology of Human and Experimental Cryptococcosis" (Lantern Slides), ALFRED BLUMBERG, Veterans Administration Hospital, Coral Gables, Fla.

7. "Pathogenesis of Extramammary Paget's Disease" (Lantern Slides), J. W. EVERSOLE, Assistant Professor of Pathology, University of Virginia Department of Medicine, Charlottesville, Va.

8. "Bronchiectasis: Clinical and Pathological Variations and Concepts of Pathogenesis" (Lantern Slides), RUSSELL S. JONES and FRANCIS H. COLE, Division of Pathology and Bacteriology, University of Tennessee College of Medicine and the West Tennessee Tuberculosis Hospital, Memphis, Tenn.

   Election of Officers.

COLLEGE OF AMERICAN PATHOLOGISTS

South Central and Southeastern Sections

Officers

John L. Goforth, Dallas, Tex., Chairman, South Central Section.
John W. Adams, Chattanooga, Tenn., Chairman, Southeastern Section.
Charles T. Ashworth, Fort Worth, Tex., Chairman, Program Committee.

Tuesday, November 6, 2:00 p.m.

Dallas Power and Light Company Building, Auditorium

Joint Meeting, Section on Pathology, Southern Medical Association, and South Central and Southeastern Sections of the College of American Pathologists.

1. Symposium and Slide Seminar on Cytological Methods by J. R. McDONALD, Professor of Pathology, University of Minnesota Graduate School of Medicine, Rochester, Minn.

2. Round-Table Discussion on Cytology, J. R. McDONALD, Professor of Pathology, University of Minnesota Graduate School, Rochester, Minn.; WM. F. MENGERT, Professor of Obstetrics and Gynecology, Southwestern Medical School of the University of Texas, Dallas, Tex.; A. J. GILL, Professor of Surgical Pathology, Southwestern Medical School of the University of Texas, Dallas, Tex.; and JOHN L. WALLACE, Pathologist, Terrell's Laboratories, Fort Worth, Tex.

Wednesday, November 7, 2:00 p.m.

Dallas Power and Light Company Building, Auditorium

Joint Meeting, Section on Pathology, Southern Medical Association and South Central and Southeastern Sections, College of American Pathologists.

SYMPOSIUM ON MEDICOLEGAL PROBLEMS

3. "The Role of the Pathologist in Medicolegal Work," OSCAR B. HUNTER, SR., Adjunct Professor of Clinical Pathology, American University; and Consultant to the Coroner of the District of Columbia, Washington, D. C.

4. "Demonstration and Discussion of Methods for Alcohol Determination," M. F. MASON, Professor of Pathological Chemistry, Southwestern Medical School of the University of Texas, Dallas, Tex.

5. "Legal Aspects," JOE C. STEPHENS, JR., Attorney at Law, Dallas, Tex

6. "The Medicolegal Autopsy" (Lantern Slides), FRANK R. DUTRA, Associate Professor of Forensic Pathology, University of Cincinnati School of Medicine, Cincinnati, O.; and E. E. MUIRHEAD, Professor of Pathology, Southwestern Medical School of the University of Texas, Dallas, Tex.

7. Round-Table Discussion, W. O. RUSSELL, Moderator, Houston, Tex.

Discussion opened by OSCAR B. HUNTER, Washington, D. C.; M. F. MASON, Dallas, Tex.; (Mr.) JOE C. STEPHENS, JR., Dallas, Tex.; and FRANK R. DUTRA, Cincinnati, O.

SECTION ON RADIOLOGY

Baker Hotel, Room 6

Officers

Chairman—Joseph C. Bell, Louisville, Ky.
Vice-Chairman—Robert C. Pendergrass, Americus, Ga.
Secretary—Stephen W. Brown, Augusta, Ga.

Hosts from the Dallas County Medical Society—Raymond W. Burford, Glenn D. Carlson, Jack George S. Maxfield and H. A. Mueller.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Wednesday, November 7, 9:00 a.m.

Baker Hotel, Room 6

1. Chairman's Address: "Some Difficulties in the Diagnosis of Certain Gastric Lesions" (Lantern Slides), JOSEPH C. BELL, Associate Clinical Professor of Roentgenology, University of Louisville School of Medicine, Louisville, Ky.

   Discussion opened by Davis Spangler, Clinical Assistant Professor of Radiology, Southwestern Medical School of the University of Texas, Dallas, Tex.

2. "Gastric Ulcer: Analysis of 300 Cases" (Lantern Slides), WALTER W. VAUGHAN and ROBERT J. NICHOLS, JR., Durham, N. C.

   Discussion opened by C. W. Yeats, Houston, Tex.

3. "The Diagnosis of Intracranial Abnormalities by Arteriography," CURTIS H. BURGE, Assistant Professor of Radiology, Baylor University College of Medicine, Houston, Tex.

   Discussion opened by F. C. Rehfeldt, Fort Worth, Tex.

Intermission

4. "Carcinoma of the Cervix in the Negro," MANUEL GARCIA, Associate Professor of Clinical Radiology, Tulane University School of Medicine, New Orleans, La.

   Discussion opened by Joe C. Rude, Galveston, Tex.

5. "Concerning Some Newer Technics of Radiation Treatment of Carcinoma of the Cervix" (Lantern Slides and Scientific Exhibit), EDWIN C. ERNST, Director, Barnard Free Skin and Cancer Hospital and De Paul Hospital, St. Louis, Mo.

   Discussion opened by Oscar L. Morphis, Fort Worth, Tex.

6. "Present-Day Methods of Treatment of Carcinoma of the Cervix" (Lantern Slides), H. DABNEY KERR, Professor of Radiology, University of Iowa College of Medicine, Iowa City, Ia.

   Discussion opened by Charles L. Martin, Professor of Radiology, Southwestern Medical School of the University of Texas, Dallas, Tex.

Wednesday, November 7, 12:30 p.m.

Luncheon Meeting, Dallas Country Club

7. "The Functions of the American College of Radiology," JOHN S. BOUSLOG, President, The Radiological Society of North America, and Associate Professor of Clinical Radiology, University of Colorado School of Medicine, Denver, Colo.

8. "A Therapeutic Program with Radioisotopes" (Lantern Slides), MARSHALL BRUCER, Chairman, Medical Division, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.

Thursday, November 8, 9:00 a.m.

Baker Hotel, Room 6

9. "Analysis of 1,000 Cholecystographic Examinations with Operative Confirmation in 94" (Lantern Slides), PETER E. RUSSO, Chairman, Department of Radiology, and C. J. CAVANAUGH, Instructor, Department of Radiology, University of Oklahoma School of Medicine and University Hospitals, Oklahoma City, Okla.

   Discussion opened by Herman C. Sehested, Fort Worth, Tex.

10. "The Role of Radiology in the Diagnosis of Brain Tumors" (Lantern Slides), ARTHUR B. SMITH, Kansas City, Mo.

    Discussion opened by Raymond W. Burford, Clinical Assistant Professor of Radiology, Southwestern Medical School of the University of Texas, Dallas, Tex.

11. "Chronic Perforating Carcinoma of the Colon" (Lantern Slides), CLYDE A. STEVENSON, Professor of Radiology, and ARNO W. SOMMER, Assistant Professor of Radiology, University of Texas Post Graduate School, Temple Division, Temple, Tex.

    Discussion opened by Leslie M. Garrett, Corpus Christi, Tex.

Intermission

12. "Aneurysm of the Ascending Aorta" (Lantern Slides), J. E. MILLER, Associate Professor of Radiology, Southwestern Medical School of the University of Texas, Dallas, Tex.

    Discussion opened by Albert G. Barsh, Lubbock, Tex.

13. "A Relatively Simple Method of Bronchography for the Radiologist" (Lantern Slides), J. A. MEADOWS, JR., Birmingham, Ala.

    Discussion opened by Royal F. Wertz, Amarillo, Tex.

14. "Medical Uses of Cobalt 60" (Lantern Slides), HERBERT D. KERMAN, Radiologist, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn., and Associate Professor of Radiology, University of Louisville School of Medicine, Louisville, Ky. (On leave).

    Discussion opened by R. L. Clark, Houston, Tex.

Election of Officers.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

Officers

Chairman—J. Lamar Callaway, Durham, N. C.
Vice-Chairman—Martin F. Engman, Jr., St. Louis, Mo.
Secretary—D. Truett Gandy, Houston, Tex.

Hosts from the Dallas County Medical Society—D. Shelton Blair, J. Gilmore Brau, Earl L. Loftis and Bedford Shelmire.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 9:30 a.m.

Baylor Hospital

Case presentations by Dallas Dermatological Society followed by a luncheon and discussion of cases. Dr. J. B. Howell and Dr. D. Shelton Blair, Medical Arts Building, Dallas, Local Chairmen for Clinic.

Wednesday, November 7, 9:00 a.m.

Adolphus Hotel, Parlor G

1. Chairman's Address: "ACTH and Cortisone: Their Role in Dermatologic Therapy," J. LAMAR CALLAWAY, Professor of Dermatology and Syphilology, Duke University School of Medicine, Durham, N. C.

2. "Dermatological Conditions of the Breast" (Lantern Slides), NELSON PAUL ANDERSON, Clinical Professor of Dermatology and Syphilology, University of Southern California School of Medicine, Los Angeles, Calif.

3. "Reflections of a Professor Emeritus" (Lantern Slides and Motion Pictures), G. P. LINGENFELTER, Professor Emeritus of Dermatology and Syphilology, University of Colorado School of Medicine, Denver, Colo.

Intermission

4. "An Appraisal of Hormonal Therapy in Dermatology," A. H. LANCASTER, Knoxville, Tenn.

   Discussion opened by M. T. Van Studdiford, Professor of Clinical Dermatology, Tulane University School of Medicine, New Orleans, La.; James G. Thompson, Jackson, Miss.

5. "The Treatment of Larva Migrans with Stibanose," J. FRANK WILSON, Jacksonville, Fla.

   Discussion opened by Joseph M. Hitch, Raleigh, N. C.; John M. Van de Erve, Jr., Charleston, S. C.

6. "Attenuated Virus in Autogenous Blood Serum as a Therapeutic Measure in Herpes Zoster," CHAS. P. BONDURANT, Professor of Dermatology and Syphilology, University of Oklahoma School of Medicine, Oklahoma City, Okla.

   Discussion opened by Thomas W. Murrell, Professor Emeritus of Dermatology and Syphilology, Medical College of Virginia, Richmond, Va.; Howard Hailey, Atlanta, Ga.

Thursday, November 8, 9:00 a.m.

Adolphus Hotel, Parlor G

7. "Herpes Gestationis and the Rh Factor" (Lantern Slides), EDWARD P. CAWLEY, Professor and Chairman, Department of Dermatology and Syphilology, University of Virginia Department of Medicine, Charlottesville, Va.

   Discussion opened by Clinton W. Lane, Assistant Professor of Clinical Dermatology, Washington University School of Medicine, St. Louis, Mo.; Francis A. Ellis, Assistant Professor of Dermatology, University of Maryland School of Medicine, Baltimore, Md.

8. "Antifungal Antibiotics of Clinical Importance," WILFRED E. WOOLDRIDGE, Springfield, Mo., Instructor in Dermatology, Washington University School of Medicine, St. Louis, Mo.

   Discussion opened by John H. Lamb, Associate Professor of Dermatology and Syphilology, University of Oklahoma School of Medicine, Oklahoma City, Okla.; C. Barrett Kennedy, Clinical Assistant Professor, Louisiana State University School of Medicine, New Orleans, La.

9. "A Clinical Evaluation of Neomycin in Different Ointment Bases," M. ALLEN FORBES, Austin, Tex., Assistant Professor of Dermatology, University of Texas Medical Branch, Galveston, Tex.

   Discussion opened by William L. Poole, Birmingham, Ala.; Wm. L. Kirby, Assistant Professor of Clinical Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

Intermission

10. "Nummular Dermatitis," ELLIS P. COPE, Associate Professor of Medicine (Dermatology and Syphilology), University of Arkansas School of Medicine, Little Rock, Ark.

    Discussion opened by James B. Howell, Dallas, Tex.; Adolph B. Loveman, Assistant Clinical Professor of Dermatology and Syphilology, University of Louisville School of Medicine, Louisville, Ky.

11. "Tinea Capitis: The Endothrix Infections" (Lantern Slides), C. FERD LEHMANN, J. LEWIS PIPKIN, ARTHUR C. RESSMANN, San Antonio, Tex., and ALBERT M. KLIGMAN, Philadelphia, Pa.

    Discussion opened by Everett R. Seale, Professor of Clinical Dermatology and Syphilology, Baylor University College of Medicine, Houston, Tex.; Leslie M. Smith, El Paso, Tex.

12. "Salicylate Intoxication from Cutaneous Absorption of Salicylic Acid," C. JACK YOUNG, Oklahoma City, Okla.

    Discussion opened by Robert C. Thompson, Chattanooga, Tenn.; Onis G. Hazel, Associate Professor of Dermatology and Syphilology, University of Oklahoma School of Medicine, Oklahoma City, Okla.

Election of Officers.

SECTION ON ALLERGY

Adolphus Hotel, Parlor D

Officers

Chairman—Alan G. Cazort, Little Rock, Ark.
Vice-Chairman—Vincent J. Derbes, New Orleans, La.
Secretary—Ralph Bowen, Houston, Tex.

Hosts from the Dallas County Medical Society—J. Harvey Black, Norman H. Gross, Max H. Grow and Albert M. Tocker.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 2:00 p.m.

Adolphus Hotel, Parlor D

1. Chairman's Address: "The Snows of Yesteryear," ALAN G. CAZORT, Clinical Professor of Medicine, University of Arkansas School of Medicine, Little Rock, Ark.

2. "Tissue Culture Studies on Human Skin. III Comparative Toxic Effects of Representative Topical Medicaments when Tested *In Vitro* and by Application to the Skin with a Closed Patch Test Technic" (Lantern Slides), CLARENCE S. LIVINGOOD, Professor and Director, Department of Dermatology, J. F. MULLINS, S. NILASENA, FENAN HU and C. M. POMERAT, University of Texas Medical Branch, Galveston, Tex.

Intermission

3. "Urticaria and Its Problems" (Lantern Slides), CHARLES B. SHUEY, Assistant Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.

4. "Bacterial Allergy," HERMANN BLATT, Cincinnati, O.

Tuesday, November 6, 12:15 p.m.

Adolphus Hotel, North Room

Allergy Luncheon.

Tuesday, November 6, 2:00 p.m.

Adolphus Hotel, Parlor D

5. "The Clinical Use of ACTH and Cortisone in the Treatment of Allergic Disease" (Lantern Slides), STANLEY F. HAMPTON, Instructor in Medicine, Washington University School of Medicine and Consultant in Allergy, Barnes Hospital, St. Louis, Mo.

6. "Responses of Human Allergic Cells in Tissue Culture" (Lantern Slides and Motion Pictures), C. M. POMERAT, Professor of Cytology, University of Texas Medical Branch, Galveston, Tex.

Intermission

7. "Modern Concepts in the Management of Bronchial Asthma" (Lantern Slides), JOHN M. SHELDON, Professor of Internal Medicine, University of Michigan Medical School, Ann Arbor, Mich.

8. Round-Table Discussion on "Bacterial Allergy," led by L. O. DUTTON, Chairman, El Paso, Tex.; OSCAR SWINEFORD, JR., Professor of Practice of Medicine, University of Virginia Department of Medicine, Charlottesville, Va.; JAMES HOLMAN, Dallas, Tex.; HERMANN BLATT, Cincinnati, O.; CLEMENT J. SULLIVAN, St. Louis, Mo.; W. B. SHERMAN, New York, N. Y.

Election of Officers.

SECTION ON PHYSICAL MEDICINE AND REHABILITATION

Adolphus Hotel, Parlor B

Officers

Chairman—E. M. Smith, Washington, D. C.
Vice-Chairman—A. Ray Dawson, Richmond, Va.
Secretary—Sedgwick Mead, St. Louis, Mo.

Hosts from the Dallas County Medical Society—Russ B. Graham, Edward M. Krusen, Jr., Ursula M. Leden and Margaret Watkins.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 1:30 p.m.

Adolphus Hotel, Parlor B

1. Chairman's Address: "Physical Medicine in the Management of Peripheral Nerve Injuries," E. M. SMITH, Col., Medical Corps; Chief, Physical Medicine, Consultants Division, Office of the Surgeon General, U. S. Army, Washington, D. C.

2. "Electromyography in the Practice of Physical Medicine and Rehabilitation" (Lantern Slides), JAMES G. GOLSETH, Associate Professor of Medicine (Physical), University of Southern California School of Medicine, Los Angeles, Calif.

   Discussion opened by Sedgwick Mead, St. Louis, Mo.

3. "Physical Treatment of Fractures," E. M. KRUSEN, JR., Dallas, Tex.

   Discussion opened by Lee T. Ford, St. Louis, Mo.

Intermission

4. "Present Status of Use of Ultrasonic Energy in Physical Medicine," FRANK H. KRUSEN, Professor of Physical Medicine, University of Minnesota Graduate School of Medicine, Rochester, Minn.

5. "The Role of Occupational Therapy in the Physical Medicine Management of Physical Disabilities," C. D. SHIELDS, Lt. Col., Medical Corps, U. S. Army; Chief, Physical Medicine Service, Brooke Army Hospital; and Assistant Professor of Physical Medicine, Graduate School, Baylor University; WAYNE R. OELHAFEN, Maj., Medical Corps, U. S. Army, Assistant Chief, and HELEN R. SHEEHAN, Maj., W.M.S.C. (OT), Chief Occupational Therapy Section, Physical Medicine Service, Brooke Army Hospital, San Antonio, Tex.

   Discussion opened by A. Ray Dawson, Richmond, Va.

6. "Post-Injection Paralysis," GEORGE D. WILSON and WILLIAM F. HILLIER, JR., Asheville, N. C.

   Discussion opened by E. M. Smith, Col., Medical Corps, U. S. Army; Chief, Physical Medicine, Consultants Division, Office of the Surgeon General, Washington, D. C.

7. "Some Considerations Regarding Long-Term Rehabilitation of Brain Injuries" (Motion Pictures), BEN L. BOYNTON, Chief, and LEWIS A. LEAVITT, Assistant Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Houston, Tex.

   Discussion opened by Raoul C. Psaki, Lt. Col., Medical Corps, U. S. Army; Assistant Director, Department of Physical Medicine, Brooke Army Medical Center, Fort Sam Houston, Tex.

8. "Conservative Treatment of Degenerative Arthritis of the Knee," OSCAR O. SELKE, JR., Houston, Tex.

Election of Officers.

SECTION ON INDUSTRIAL MEDICINE AND SURGERY

Adolphus Hotel, Parlor D

Officers

Chairman—Kieffer D. Davis, Bartlesville, Okla.
Vice-Chairman—Richard A. Sutter, St. Louis, Mo.
Secretary—J. J. Brandabur, Huntington, W. Va.

Hosts from the Dallas County Medical Society—Frank J. Altick, Sidney Galt, G. V. Launey and C. J. Paternostro.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 9:00 a.m.

Adolphus Hotel, Parlor D

1. Opening Remarks by the Chairman, KIEFFER D. DAVIS, Bartlesville, Okla.

2. "Industrial Hygiene Problems as Seen by a Workman Compensation Carrier" (Lantern Slides), (Mr.) HENRY T. HERNDON, Industrial Hygiene Engineer, Texas Employers' Insurance Association, Dallas, Tex.

   Discussion opened by Carl A. Nau, Galveston, Tex.

3. "Disabilities Due to Hand Injuries" (Lantern Slides), FRANK L. FLACK, Chief Surgeon, Sinclair Companies, Tulsa, Okla.

Intermission

4. "Problems Associated with Employment of Handicapped People in Industry," C. U. DERNEHL, Medical Director, Carbide and Carbon Chemicals Company Texas Plant, A Division of Union Carbide and Carbon Corporation, Texas City; Visiting Lecturer, Industrial Hygiene University of Texas Medical Branch, Galveston; and Assistant Professor of Industrial Medicine, Baylor University College of Medicine, Houston, Tex.

   Discussion opened by R. Lomax Wells, Washington, D. C.

5. "Disability Evaluation," EARL D. McBRIDE, Clinical Professor of Orthopedic and Fracture Surgery, University of Oklahoma School of Medicine, Oklahoma City, Okla.

6. "The Problem of Low Back Pain in Industry," W. B. WEARY, Dallas, Tex.

7. "The Problem of Industrial Deafness," ARTHUR M. ALDEN, Associate Professor of Clinical Otolaryngology, Washington University School of Medicine, St. Louis, Mo.

Election of Officers.

SECTION ON SURGERY

Baker Hotel, Crystal Ballroom

Officers

Chairman—James M. Mason, III, Birmingham, Ala.
Vice-Chairman—Franklin E. Walton, St. Louis, Mo.
Secretary—John V. Goode, Dallas, Tex.

Hosts from the Dallas County Medical Society—B. L. Aronoff, Dan C. Gill, Ben F. Harrison and Ridings E. Lee.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 2:00 p.m.

Baker Hotel, Crystal Ballroom

1. "The Surgical Treatment of Chronic Ulcerations of the Lower Extremity," ROBERT R. LINTON, Brookline, Mass.

2. "Modern Technics in Gallbladder Surgery" (Lantern Slides), WARFIELD M. FIROR, Associate Professor of Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

3. "Preoperative and Postoperative Problems in Surgery," CARL A. MOYER, Bixby Professor of Surgery, Washington University School of Medicine, St. Louis, Mo.

Intermission

4. "A Comparison of the Use of Invert Sugar and Dextrose in Surgery" (Lantern Slides), J. J. WEINSTEIN, Washington, D. C.

5. "Progress in Pediatric Surgery" (Lantern Slides), J. W. DUCKETT, Clinical Associate Professor of Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

6. "Differential Diagnosis of Tumors of the Neck" (Lantern Slides), JAMES W. HENDRICK, San Antonio, Tex.

   Discussion opened by Leo J. Starry, Oklahoma City, Okla.; J. W. Nixon, San Antonio, Tex.

Monday, November 5, 6:30 p.m.

Adolphus Hotel, Cactus Room

Section on Surgery Dinner.

Tuesday, November 6, 2:00 p.m.

Baker Hotel, Crystal Ballroom

7. "The Choice of Treatment for the Patient with Cancer" (Lantern Slides), CHARLES L. MARTIN, Professor of Radiology, Southwestern Medical School of the University of Texas, Dallas, Tex.

8. Chairman's Address: "The Early Treatment of Thoracico-Abdominal Injuries," JAMES M. MASON, III, Associate Professor of Surgery, Medical College of Alabama, Birmingham, Ala.

9. "Low Back Pain" (Lantern Slides), PAUL C. WILLIAMS, Clinical Associate Professor of Orthopedic Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

Intermission

10. "The Complicated Peptic Ulcer: Analysis of 347 Cases Requiring Subtotal Resection" (Lantern Slides), PHILIP S. KLINE, San Antonio, Tex.

11. "Gallstone Obstruction of the Intestine" (Lantern Slides), R. L. SANDERS, Professor of Surgery and R. M. POOL, Associate Professor of Surgery, University of Tennessee College of Medicine, Memphis, Tenn.

12. "The Pathology of Thyroid Neoplasms" (Lantern Slides),

BERNARD F. MANN, JR., Assistant Professor of Pathology, Medical College of Alabama, Birmingham, Ala.

Election of Officers.

SECTION ON ORTHOPEDIC AND TRAUMATIC SURGERY

Dallas Power and Light Company Building, Auditorium

Officers

Chairman—Howard A. Swart, Charleston, W. Va.
Vice-Chairman—Rufus H. Alldredge, New Orleans, La.
Secretary—R. Beverly Raney, Durham, N. C.

Hosts from the Dallas County Medical Society—Dorsey K. Barnes, Felix L. Butte, Floyd S. Franklin and Marvin P. Knight.

Presentations limited to fifteen minutes, with the exception of the Chairman's address and the out-of-territory essayist, with discussion limited to five minutes—thirty-minute periods.

Tuesday, November 6, 9:00 a.m.

Dallas Power and Light Company Building, Auditorium

1. "Intramedullary Fixation of Fractures of the Forearm" (Lantern Slides), R. H. HALL, Veterans Administration Hospital, Fayetteville, N. C., E. I. BUGG, JR., Durham, N. C., and R. E. VITOLO, Veterans Administration Hospital, Fayetteville, N. C.

2. "Intramedullary Fixation of Fractures of the Tibia" (Lantern Slides), J. OTTO LOTTES, Assistant Clinical Instructor in Orthopedic Surgery, Washington University School of Medicine, St. Louis, Mo.

   Discussion on papers Nos. 1 and 2 opened by F. Walter Carruthers, Associate Professor of Orthopedic Surgery, University of Arkansas School of Medicine, Little Rock, Ark.; Robert A. Knight, Memphis, Tenn.

3. "Poliomyelitis: Surgical Rehabilitation of the Thumb and Index Finger," (a Motion Picture) produced by C. E. IRWIN and Staff of the Georgia Warm Springs Foundation and narrated by RALPH W. COONRAD, Warm Springs, Ga.

Intermission

4. "Experiences with Wrist Fusion," W. K. WEST, Professor of Orthopedic and Fracture Surgery, University of Oklahoma School of Medicine, Oklahoma City, Okla.

   Discussion opened by Frank H. Stelling, Greenville, S. C.

5. "A Correlation of Operative Findings and Results in Lumbar Disks," DAVID R. OLIVER and M. H. MORRIS, San Antonio, Tex.

   Discussion opened by Paul C. Williams, Clinical Associate Professor of Orthopedic Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

6. "Fractures of the Hip in the Hemiplegic," LESLIE C. MEYER, Fellow, National Foundation for Infantile Paralysis, Duke Hospital, Durham, N. C.

   Discussion opened by William K. Massie, Lexington, Ky.

Wednesday, November 7, 9:00 a.m.

Dallas Power and Light Company Building, Auditorium

7. "Stellate Ganglion Block in Treatment of Bursitis and Tendinitis of the Shoulder" (Lantern Slides and Motion Pictures), EVERETT J. GORDON, Washington, D. C.

8. "Suprascapular Nerve Block for the Painful Shoulder" (Lantern Slides), J. LEONARD GOLDNER, Associate in Orthopedics, Duke University School of Medicine, Durham, N. C.

   Discussion on papers Nos. 7 and 8 opened by Mary Ruth Jackson, Dallas, Tex.; R. D. Butterworth, Assistant Professor of Orthopedic Surgery, Medical College of Virginia, Richmond, Va.

9. "Screw Transfixation for Diastasis of Ankle Joint" (Lantern Slides), JUDSON D. WILSON, Associate Professor of Orthopedic Surgery, Ohio State University College of Medicine, Columbus, O.

Intermission

10. "Peritendinitis Calcarea," RICHARD T. ODELL, Assistant Professor of Orthopedics, and EARL P. HOLT, Assistant in Surgery, Washington University School of Medicine, St. Louis, Mo.

    Discussion opened by Herbert E. Hipps, Waco, Tex.

11. "End Result Study of 546 Cases of Fracture of the Humerus" (Lantern Slides), MARCUS J. STEWART, Associate Professor of Orthopedics, University of Tennessee College of Medicine, Memphis, Tenn., and JOHN M. HUNDLEY, Little Rock, Ark.

    Discussion opened by Percy M. Girard, Professor of Orthopedic Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

12. "Rational Treatment of Os Calcis Fractures" (Lantern Slides), FRANK C. HODGES, Abilene, Tex.

    Discussion opened by Earl D. McBride, Clinical Professor of Orthopedic and Fracture Surgery, University of Oklahoma School of Medicine, Oklahoma City, Okla.

Thursday, November 8, 9:00 a.m.

Dallas Power and Light Company Building, Auditorium

13. "Adolescent Coxa Vara: Clinical Considerations and Aspects of Treatment" (Lantern Slides), IRA H. RAPP, Charlotte, N. C.

    Discussion opened by Brandon Carrell, Clinical Assistant Professor of Orthopedic Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

14. "Early Diagnosis of Flat-Headed Femur" (Lantern Slides), J. HIRAM KITE, Surgeon-in-Chief, Scottish Rite Hospital for Crippled Children, Decatur, Ga., and Assistant Professor of Clinical Surgery (Orthopedic), Emory University School of Medicine and GEORGE O. FRENCH, Atlanta, Ga.

    Discussion opened by George W. N. Eggers, Professor of Surgery (Orthopedic), University of Texas Medical Branch, Galveston, Tex.

15. Chairman's Address: "The Use of Cutis (Skin) as Repair Material in Orthopedic Operations" (Lantern Slides), HOWARD A. SWART, Charleston, W. Va.

Intermission

16. "The Self-Locking Vitallium Prosthesis to Replace the Femoral Head" (Lantern Slides), AUSTIN T. MOORE, Columbia, S. C.

    Discussion opened by Dana M. Street, Kennedy Veterans Administration Hospital, Memphis, Tenn.

17. "Lower Extremity Amputations" (Lantern Slides), AUGUST W. SPITTLER, Col., Medical Corps, U. S. Army; Chief, Orthopedic Section, Walter Reed Army Hospital, Washington, D. C.; and JOHN J. BRENNAN, Lt. Col., Medical Corps, U. S. Army; Chief, Orthopedic Service, U. S. Army Hospital, Camp Gordon, Ga.

18. "The Suction Socket Prosthesis and Amputation Technic" (Lantern Slides), JOE G. BURD, Consultant, Veterans Administration, Nashville Regional Office, Nashville, Tenn.

    Discussion on papers Nos. 17 and 18 opened by Milton S. Thompson, Col., Medical Corps, U. S. Army, Brooke Army Hospital, Fort Sam Houston, Tex.; Rufus H. Alldredge, Assistant Professor of Clinical Orthopedics, Tulane University School of Medicine, New Orleans, La.

Election of Officers.

SECTION ON GYNECOLOGY

Adolphus Hotel, Roof Garden

Officers

Chairman—J. Randolph Perdue, Miami, Fla.
Vice-Chairman—Curtis J. Lund, New Orleans, La.
Secretary—William Thomas Black, Jr., Memphis, Tenn.

Hosts from the Dallas County Medical Society—G. F. Goff, Arthur P. Gottlich, Clarence B. Sacher and George A. Schenewerk.

Presentations limited to fifteen minutes with three minutes for discussion—twenty-five minute periods.

Tuesday, November 6, 9:00 a.m.

Adolphus Hotel, Roof Garden

1. "Pathology of Abnormal Uterine Bleeding" (Scientific Exhibit), RICHARD A. STREET, JR., Vicksburg, Miss.

   Discussion opened by John M. Fleming, Spartanburg, S. C.

2. "Recent Advances in the Treatment of Functional Uterine Bleeding" (Lantern Slides), ROBERT B. GREENBLATT, Professor of Endocrinology, and WM. E. BARFIELD, Research Fellow in Endocrinology, Medical College of Georgia, Augusta, Ga.

   Discussion opened by Willis E. Brown, Little Rock, Ark.

3. "Surgical Unification of Double Uterus: Technic, Indications and Results" (Lantern Slides), ERWIN O. STRASSMANN, Associate Professor of Clinical Gynecology, Baylor University College of Medicine, Houston, Tex.

   Discussion opened by Frank R. Lock, Professor of Obstetrics and Gynecology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

Intermission

4. "Evaluation of Thyroid in the Treatment of Sterility" (Lantern Slides), GARTH L. JARVIS, Assistant Professor of Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, Tex.

   Discussion opened by H. Hudnall Ware, Jr., Professor of Obstetrics, Medical College of Virginia, Richmond, Va.

5. "Vaginal Hysterectomy on a Teaching Service" (Lantern Slides), PHIL C. SCHREIER, Associate Professor of Gynecology and Obstetrics, University of Tennessee College of Medicine, and C. RAYMOND GREEN, Memphis, Tenn.

   Discussion opened by Joseph W. Kelso, Associate Professor of Gynecology, University of Oklahoma School of Medicine, Oklahoma City, Okla.

6. "X-Radiation Treatment in the Management of Severe Chronic Pelvic Inflammations," GEORGE A. WILLIAMS, Assistant Professor of Obstetrics and Gynecology, and A. S. VELKOFF, Assistant in Obstetrics and Gynecology, Emory University School of Medicine, Atlanta, Ga.

   Discussion opened by Ralph S. Clayton, Dallas, Tex.

Wednesday, November 7, 9:00 a.m.

Adolphus Hotel, Roof Garden

7. "Pelvic Abscesses," C. GORDON JOHNSON, Associate Professor of Clinical Gynecology, and CONRAD G. COLLINS, Professor of Obstetrics and Gynecology and Chairman of Department, Tulane University School of Medicine, New Orleans, La.

   Discussion opened by C. R. Bates, Dallas, Texas.

8. "Effect of Lymph Node Metastases on Prognosis in Carcinoma of the Cervix and Vulva," ALFRED I. SHERMAN, St. Louis, Mo., and ROBERT M. RUCH, Memphis, Tenn.

   Discussion opened by John A. Wall, Associate Professor of Clinical Gynecology, Baylor University College of Medicine, Houston, Tex.

9. "Regression of Cervical Carcinoma *In Situ* Following Aureomycin: A Further Report," J. ERNEST AYRE, Director, Cancer Cytology Center, Dade County Cancer Institute, Miami, Fla.

   Discussion opened by Carey Hiett, Fort Worth, Tex.

Intermission

10. "Carcinoma of the Ovary: Its Newer Concepts" (Lantern Slides), WILLIAM F. GUERRIERO, Clinical Associate Professor of Obstetrics and Gynecology, Southwestern Medical School of the University of Texas, Dallas, Tex.

    Discussion opened by John C. Weed, New Orleans, La.

11. Chairman's Address: "The Future in Gynecology," J. RANDOLPH PERDUE, Miami, Fla.

Election of Officers.

SECTION ON OBSTETRICS

Adolphus Hotel, Roof Garden

Officers

Chairman—Walter A. Ruch, Memphis, Tenn.
Vice-Chairman—Hugh G. Hamilton, Kansas City, Mo.
Secretary—Leo J. Hartnett, St. Louis, Mo.

Hosts from the Dallas County Medical Society—Wm. P. Devereux, William F. Guerriero, Oran V. Prejean and Jules W. Vieaux.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Monday, November 5, 2:00 p.m.

Adolphus Hotel, Roof Garden

1. "Postpartum Hematomata" (Lantern Slides), HUGH B. McNALLY, Assistant Professor of Obstetrics, University of Maryland School of Medicine, and DANIEL EHRLICH, Baltimore, Md.

   Discussion opened by Wm. P. Devereux, Clinical Associate Professor of Obstetrics and Gynecology, Southwestern Medical School of the University of Texas, Dallas, Tex.

2. "A Critical Analysis of Primiparity," JOHN M. NOKES, Professor of Obstetrics and Gynecology, W. N. THORNTON, JR., Professor and Chairman, Department of Obstetrics and Gynecology, and TOM C. KING, JR., Anniston, Ala., Resident in Obstetrics and Gynecology, University of Virginia Department of Medicine, Charlottesville, Va.

   Discussion opened by Roy L. Grogan, Fort Worth, Tex.

3. "Elective Induction of Labor" (Lantern Slides), EDWIN P. SOLOMON, Associate in Obstetrics and Gynecology, and SILAS H. STARR, Clinical Professor of Obstetrics and Gynecology, University of Louisville School of Medicine, Louisville, Ky.

   Discussion opened by H. Hudnall Ware, Jr., Professor of Obstetrics, Medical College of Virginia, Richmond, Va.

Intermission

4. "The Maternal Breast" (Lantern Slides), DAVID P. FINDLEY, Assistant Professor of Obstetrics and Gynecology, University of Nebraska College of Medicine, Omaha, Nebr.

5. "Observations on the Use of Magnesium Sulphate in Cases of Preeclampsia," WILLARD R. COOKE, Professor of Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, Tex.

   Discussion opened by E. Lee Dorsett, Assistant Professor of Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.

Tuesday, November 6, 2:00 p.m.

Adolphus Hotel, Roof Garden

6. "Experiences with Rupture of Uterus in Pregnancy," O. T. WEST and CALVIN R. SIMMONS, Fairfield, Ala.

   Discussion opened by Woodard D. Beacham, Associate Professor of Clinical Gynecology and Obstetrics, Louisiana State University School of Medicine, New Orleans, La.

7. "A Comparative Clinical Study of Naturally Derived and Synthetic Oxtocic Drugs of Ergot Origin" (Lantern Slides), HUGH G. HAMILTON, ROBERT S. HIGGINS and WEBB S. ALSOP, JR., Kansas City, Mo.

   Discussion opened by Willis E. Brown, Professor of Obstetrics and Gynecology, and Director of the Department, University of Arkansas School of Medicine, Little Rock, Ark.

8. "The Prevention of Erythroblastosis Fetalis by the Use of Rh Hapten" (Lantern Slides), A. LOUIS DIPPEL, Professor of Obstetrics, Baylor University College of Medicine, Houston, Tex., and Lecturer, Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, Tex.

   Discussion opened by Eugene G. Hamilton, Senior Instructor in Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.

Intermission

9. Chairman's Address: "Obstetrical Practice under Conditions Imposed by All Out Defensive Warfare," WALTER A. RUCH, Assistant Professor of Obstetrics, University of Tennessee College of Medicine, Memphis, Tenn.

10. "Cortisone in Rh Incompatibilities" (Lantern Slides), OSCAR B. HUNTER, JR. and JOHN B. ROSS, Blood Grouping Laboratory and Georgetown University School of Medicine, Washington, D. C.

    Discussion opened by Carl Foster Moore, Jr., San Antonio, Tex.; Richard H. Fischer, Washington, D. C.

11. "Extra-Uterine Gestation: Experience at Parkland Hospital January 1944 through June 1951," C. R. BATES, Dallas, Tex.

    Discussion opened by Matthew H. Talty, Assistant Professor of Obstetrics, Baylor University College of Medicine, Houston, Tex.; Dalton C. Hartnett, Instructor in Gynecology and Obstetrics, St. Louis University School of Medicine, St. Louis, Mo.

12. "Fetal and Neonatal Mortality" (Lantern Slides), GEORGE T. SCHNEIDER, Instructor in Obstetrics and Gynecology, Tulane University School of Medicine, SIMON V. WARD and THOMAS BENTON SELLERS, New Orleans, La.

    Discussion opened by Willard R. Cooke, Professor of Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, Tex.; Floyd A. Norman, Dallas, Tex.

Election of Officers.

SECTION ON UROLOGY

Adolphus Hotel, Danish Room

Officers

Chairman—Robert Lich, Jr., Louisville, Ky.
Vice-Chairman—John F. Patton, St. Louis, Mo.
Secretary—Harold P. McDonald, Atlanta, Ga.

Hosts from the Dallas County Medical Society—Sydney S. Baird, Joseph D. Mitchell, Jr., J. Howard Shane and Vincent Vermooten.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 8:15 a.m.

Danish Room, Adolphus Hotel

Motion Pictures

"Bilateral Transplantation of the Ureters into the Rectosigmoid," LAWRENCE P. THACKSTON, Orangeburg, S. C.

"The Operative Treatment of Polycystic Kidney," J. C. KIMBROUGH, Colonel, Medical Corps, U. S. Army, and Staff, Washington, D. C.

Tuesday, November 6, 9:00 a.m.

Adolphus Hotel, Danish Room

Scientific Papers

1. "Urological Pain and Its Differential Diagnosis," H. K. TURLEY, Assistant in Urology, University of Tennessee College of Medicine, Memphis, Tenn.
   Discussion opened by J. Ullman Reaves, Mobile, Ala.
2. "Conservative Surgery of the Upper Ureter and Kidney" (Lantern Slides), MORDECAI NACHMAN and CHARLTON ARMSTRONG, Greenville, S. C.
   Discussion opened by W. A. Van Nortwick, Jacksonville, Fla.
3. "Megalo-ureter, A New Concept in Treatment" (Lantern Slides and Scientific Exhibit), EVAN L. LEWIS, Major, Medical Corps, U. S. Army, Senior Resident, Urology Section, and J. C. KIMBROUGH, Colonel, Medical Corps, U. S. Army, Chief, Urology Section, Walter Reed Army Hospital, Washington, D. C.
   Discussion opened by Hamilton W. McKay, Charlotte, N. C.
4. "Early Prostatic Carcinoma: Its Diagnosis and Treatment" (Lantern Slides), JAMES H. SEMANS, Atlanta, Ga.
   Discussion opened by Grayson Carroll, Assistant Professor of Urology, St. Louis University School of Medicine, St. Louis, Mo.
5. "Palliative Treatment of Prostatic Cancer" (Lantern Slides), JAMES B. GLANTON, RAYMOND J. FITZPATRICK, LOUIS M. ORR and JOSEPH C. HAYWARD, Orlando, Fla.
   Discussion opened by Edgar Burns, Professor of Clinical Urology, Tulane University School of Medicine, New Orleans, La.
6. "Benign Tumors of the Ureter" (Lantern Slides), W. V. PIERCE and W. R. MINER, Covington, Ky.
   Discussion opened by Hugh T. Beacham, Clinical Assistant Professor of Urology, Louisiana State University School of Medicine, New Orleans, La.

Wednesday, November 7, 8:15 a.m.

Adolphus Hotel, Danish Room

Motion Pictures

"Female Urinary Stress Incontinence," ROBERT LICH, JR., Clinical Professor of Urology, and JOSEPH E. MAURER, University of Louisville School of Medicine, Louisville, Ky.

"Transplantation of the Ureters into the Rectosigmoid and Cystectomy," CHARLES C. HIGGINS, Cleveland, O.

Wednesday, November 7, 9:00 a.m.

Adolphus Hotel, Danish Room

Scientific Papers

7. Chairman's Address: "Renal Hypertension" (Lantern Slides), ROBERT LICH, JR., Clinical Professor of Urology, University of Louisville School of Medicine, Louisville, Ky.
8. "Ureteral Obstruction Secondary to Extraureteral Inflammatory Processes" (Lantern Slides), JACK HUGHES, Durham, N. C.
   Discussion opened by Montague L. Boyd, Atlanta, Ga.
9. "The Management of Injuries of the Urethra and Genitalia" (Lantern Slides), JACK HYMAN, Mobile, Ala.
   Discussion opened by John F. Patton, Assistant Professor of Clinical Genito-urinary Surgery, Washington University School of Medicine, St. Louis, Mo.
10. "Renal Lithiasis: A New Concept Concerning Etiology, Treatment and Prevention" (Lantern Slides and Scientific Exhibit), ARTHUR J. BUTT, Pensacola, Fla.; E. A. HAUSER, Professor of Colloid Chemistry, Massachusetts Institute of Technology, Cambridge, Mass.; J. A. SEIFTER, Director of the Wyeth Institute of Applied Biochemistry, Philadelphia, Pa.; and JOSEPH Q. PERRY, Pensacola, Fla.
    Discussion opened by Linwood D. Keyser, Roanoke, Va.
11. "Significant Features in the Diagnosis and Management of Genito-urinary Tract Tuberculosis" (Lantern Slides), PAUL L. GETZOFF, New Orleans, La.
    Discussion opened by Kenneth M. Lynch, Jr., Charleston, S. C.
12. "The Role of Cystectomy for Carcinoma of the Bladder" (Lantern Slides), CHARLES C. HIGGINS, President, American Association of Genito-Urinary Surgeons, and Past President, American Urological Association, Cleveland, O.

Thursday, November 8, 8:15 a.m.

Adolphus Hotel, Danish Room

Motion Picture

"Urinary Infections: Bacteriology, Pathology and Treatment," GRAYSON CARROLL, Assistant Professor of Urology, St. Louis University School of Medicine, St. Louis, Mo.

Thursday, November 8, 9:00 a.m.

Adolphus Hotel, Danish Room

Scientific Papers

Texas Day

13. "Experiences with Percutaneous Renal Arteriography" (Lantern Slides and Motion Pictures), CHARLES A. HOOKS, Assistant Professor of Surgery in Urology, and OLIVER H. GRAVES, Resident in Urology, University of Texas Medical Branch, Galveston, Tex.
    Discussion opened by Keller Doss, Fort Worth, Tex.
14. "Ureteropyeloplasty in the Treatment of Advanced Hydronephrosis: Report of Cases" (Lantern Slides), CARSON WILLIAMS, Houston, Tex.
    Discussion opened by Harry M. Spence, Clinical Associate Professor of Urology, Southwestern Medical School of the University of Texas, Dallas, Tex.
15. "The Treatment of Nonspecific Urinary Tract Infections" (Lantern Slides), W. LESLIE BUSH, Clinical Instructor in Urology, Department of Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.
    Discussion opened by C. E. Carter, Austin, Tex.
16. Pyelogram Clinic. Urologists are urged to bring x-ray films of interesting cases and also a slide which gives a brief resume of the history and important findings. This is necessary in order that the presentation of the cases be expedited.

Election of Officers.

Monday, November 5, 6:00 p.m.

Inter-City Urological Society, see page 989 for program.

SECTION ON PROCTOLOGY

Baker Hotel, Texas Room

Officers

Chairman—Julius E. Linn, Birmingham, Ala.
Vice-Chairman—A. M. Phillips, Macon, Ga.
Secretary—Ronald F. Elkins, Springfield, Mo.

Hosts from the Dallas County Medical Society—Alvin Baldwin, Jr., Jack G. Kerr, Robert J. Rowe and Tom E. Smith.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 6:30 p.m.

Section on Proctology Dinner.

Wednesday, November 7, 2:00 p.m.

Baker Hotel, Texas Room

1. Chairman's Address: "Pathology in Proctology" (Lantern Slides), JULIUS E. LINN, Assistant Professor of Surgery (Proctology), Medical College of Alabama, Birmingham, Ala.

2. "Granulomatous Lesions of the Anorectal Region" (Lantern Slides), ROBERT J. ROWE, Clinical Assistant Professor of Proctology, Southwestern Medical School of the University of Texas, Dallas, Tex.
   Discussion opened by John Q. McGivney, Galveston, Tex.

3. "Appraisal of Injection Treatment of Internal Hemorrhoids" (Lantern Slides), J. H. DODSON and M. H. DODSON, Mobile, Ala.
   Discussion opened by V. T. Young, Knoxville, Tenn.

4. "Lymphoblastomatosis," THOMAS F. NELSON, Tampa, Fla.
   Discussion opened by A. M. Phillips, Macon, Ga.

Thursday, November 8, 2:00 p.m.

Baker Hotel, Texas Room

5. "The Repair of Major Anatomical Defects Following Fistulectomy," WALTER A. FANSLER, Clinical Professor of Surgery (Proctology), University of Minnesota Medical School, Minneapolis, Minn.
   Discussion opened by Herbert T. Hayes, Professor of Proctology, Baylor University College of Medicine, Houston, Tex.

6. "The Logical Employment of Sigmoidoscopy and Roentgenologic Examinations in Studies of the Colon," W. L. COOPER, Lexington, Ky.
   Discussion opened by Jack G. Kerr, Clinical Associate Professor of Proctology, Southwestern Medical School of the University of Texas, Dallas, Tex.

7. "Proctologic Manifestations of Amebiasis" (Lantern Slides), RALPH F. ALLEN, Miami, Fla.
   Discussion opened by James T. Jenkins, Peoria, Ill.

Intermission

8. "The Results of the Use of Chloromycetin and Other Antibiotics as Seen in Proctologic Practice," EDGAR BOLING, Atlanta, Ga.
   Discussion opened by Isaac E. Harris, Jr., Durham, N. C.

9. "Factors Influencing Prognosis of Cancer of the Colon and Rectum" (Lantern Slides), RALEIGH R. WHITE, Associate Professor of Surgery, Post-Graduate School, University of Texas, Temple Division, Temple, Tex.
   Discussion opened by Raymond L. Murdoch, Professor of Surgery, University of Oklahoma School of Medicine, Oklahoma City, Okla.

Election of Officers.

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Adolphus Hotel, Danish Room

Officers

Chairman—Francis E. LeJeune, New Orleans, La.
Chairman-Elect—Oscar Wilkinson, Washington, D. C. (deceased).
Vice-Chairman—V. R. Hurst, Longview, Tex.
Secretary—Edley H. Jones, Vicksburg, Miss.

Hosts from the Dallas County Medical Society—Tom Barr, Lester H. Quinn, J. Dudley Singleton and Maxwell Thomas.

Presentations are limited to twenty minutes including time required for presentations of lantern slides and/or motion pictures, except that the Chairman and out-of-territory essayists will be allowed thirty minutes. Discussion will be omitted but each paper will be followed by a question and answer period.

Monday, November 5, 2:00 p.m.

Adolphus Hotel, Danish Room

Dallas Day

SYMPOSIUM ON TUMORS OF THE EYE

1. "Diagnosis of Tumors of the Eye," RUBY K. DANIEL, Clinical Assistant Professor of Ophthalmology, Southwestern Medical School of the University of Texas, Dallas, Tex.

2. "Management of Tumors of the Eye," OSCAR M. MARCHMAN, JR., Dallas, Tex.

3. "Use of Radiation Therapy," J. R. MAXFIELD, JR., Dallas, Tex.

Intermission

4. "Wide Field Laryngectomy" (Motion Pictures), CLAUDE D. WINBORN, Assistant Clinical Professor, Southwestern Medical College of the University of Texas, Dallas, Tex.

5. "Otitis Media with Effusion," J. DUDLEY SINGLETON, Professor of Otolaryngology, Southwestern Medical School of the University of Texas, Dallas, Tex.

6. "The Management of Lacerations of the Face" (Lantern Slides), J. T. MILLS, Clinical Professor of Plastic Surgery, Southwestern Medical School of the University of Texas, Dallas, Tex.

Tuesday, November 6, 2:00 p.m.

Adolphus Hotel, Danish Room

7. "The Management of Pterygia, with Particular Reference to Recurrent Pterygia," GEORGE M. HAIK, Professor and Head of Department of Ophthalmology, WOOD LYDA, Clinical Assistant, and RICHEY WAUGH, Clinical Assistant, Louisiana State University School of Medicine, New Orleans, La.

8. "Tumors of the Face and Neck in Infancy and Childhood" (Lantern Slides), JAMES H. MAXWELL, Professor of Otolaryngology, University of Michigan Medical School, Ann Arbor, Mich.

9. "Postoperative Care in Major Eye Surgery," J. W. JERVEY, Greenville, S. C.

10. "The Present Status of Otitis Media and Mastoiditis" (Lantern Slides), PETER N. PASTORE, Professor of Otology, Rhinology and Laryngology, Medical College of Virginia, Richmond, Va.

Intermission

11. "The Use of ACTH and Cortisone in Ophthalmology," ALAN C. WOODS, Wm. Holland Wilmer Professor of Ophthalmology, Johns Hopkins University School of Medicine, and Director, Wilmer Ophthalmological Institute, Baltimore, Md.

12. "Fractures of the Face" (Lantern Slides), JOSEPH A. BUCHIGNANI, Instructor in Otolaryngology, University of Tennessee College of Medicine, Memphis, Tenn.

13. "Surgical Treatment of Malignant Tumors of the Ocular Adnexa" (Lantern Slides), CHARLES P. GRANT, Instructor in Ophthalmology, Medical College of Alabama, Birmingham, Ala.

Wednesday, November 7, 2:00 p.m.

Adolphus Hotel, Danish Room

14. "The Problem of Sore Throat with Special Reference to Modern Therapy" (Lantern Slides), A. R. HOLLENDER, Miami Beach, Fla., Professor Emeritus of Otolaryngology, University of Illinois College of Medicine, Chicago, Ill.

15. "Some External Ocular Signs Associated with Constitutional Disease" (Lantern Slides), EDWIN B. DUNPHY, Professor of Ophthalmology, Harvard Medical School, Boston, Mass.

16. "Specific and Rational Therapy in Otolaryngology," WATT W. EAGLE, Professor of Otolaryngology, Duke University School of Medicine, Durham, N. C.

17. "Unilateral Exophthalmos: Its Neurosurgical Significance in Ophthalmology and Otolaryngology," CHARLES L. NEILL, JR., Jackson, Miss.

Intermission

18. "Ocular Signs of Intracranial Vascular Accidents and Injuries" (Lantern Slides), ALFRED N. COSTNER, Instructor in Ophthalmology, Duke University School of Medicine, Durham, N. C.

19. "Allergic Rhinitis," WILLIAM D. GILL, San Antonio, Tex.

20. "The Use of Banthine in Ophthalmology," MORGAN B. RAIFORD, Atlanta, Ga.

Thursday, November 8, 2:00 p.m.

Adolphus Hotel, Danish Room

21. "The Control of Trachoma," K. W. COSGROVE, Clinical Professor of Ophthalmology, University of Arkansas School of Medicine, Little Rock, Ark.

22. Chairman's Address: "Laryngectomies in Review," FRANCIS E. LeJEUNE, Professor of Otolaryngology, Tulane University School of Medicine, New Orleans, La.

23. "Evaluation of Available Therapeutic Agents in Ophthalmology," JOSEPH B. ROGERS, Oxford, Miss.

24. "Dextrocardia Secondary to Foreign Body in Left Bronchus" (Lantern Slides), MURDOCK EQUEN, FRANK BUCKNER, GEORGE ROACH and ROBERT H. BROWN, JR., Atlanta, Ga.

Intermission

25. "The Use and Abuse of Ointments in Ophthalmology," H. B. DOZIER and PAUL W. RENKEN, New Orleans, La.

26. "Headache, Migraine and Histaminic Cephalgia: Their Differential Diagnosis and Treatment" (Lantern Slides and Scientific Exhibit), ROBERT E. RYAN, St. Louis, Mo.

27. "The Treatment of Dacryocystitis in Infants," E. NORRIS ROBERTSON, Clinical Instructor in Ophthalmology, University of Oklahoma School of Medicine, Oklahoma City, Okla.

Election of Officers.

ASSOCIATION FOR RESEARCH IN OPHTHALMOLOGY

Southern Section

A. E. Meisenbach, Jr., Secretary, Dallas, Tex., presiding.

Joint Dinner Meeting with the Section on Ophthalmology and Otolaryngology, Southern Medical Association.

Tuesday, November 6, 6:30 p.m.

Adolphus Hotel, Parlor D

1. "The Surgical Treatment of Congenital Glaucoma," E. NORRIS ROBERTSON, Clinical Instructor in Ophthalmology, University of Oklahoma School of Medicine, Oklahoma City, Okla.

2. "Thermal Detachment of the Anterior Lamella of the Anterior Lens Capsule" (Lantern Slides), ALSTON CALLAHAN, Professor of Ophthalmology, Medical College of Alabama, Birmingham, Ala.

3. "Spatial Distortion Due to Anisopia," PAUL A. CIBIS, School of Aviation Medicine, U. S. Air Force, Randolph Field, San Antonio, Tex.

4. "Action of Detergents on the Corneal Epithelium: A Preliminary Report," EDMUND L. LECKERT, Instructor, Department of Ophthalmology, and JAMES H. ALLEN, Professor of Ophthalmology, Tulane University School of Medicine, New Orleans, La.

SECTION ON ANESTHESIOLOGY

Baker Hotel, Room 6

Officers

Chairman—David A. Davis, Augusta, Ga.
Vice-Chairman—R. M. S. Barrett, Clayton, Mo.
Secretary—Albert J. Ochsner, II, New Orleans, La.

Hosts from the Dallas County Medical Society—O. F. Bush, Robert B. Dodd, Earl F. Weir and Joe B. Wood.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Wednesday, November 7, 2:00 p.m.

Baker Hotel, Room 6

Texas Day

1. "Pentothal Anesthesia," RANDLE J. BRADY, Instructor in Anesthesia, Baylor University College of Medicine, Houston, Tex.

2. "Effects of Carbon Dioxide Excess on the Human Heart," GEORGE A. CULVER, Assistant Professor of Anesthesia, Baylor University College of Medicine, and Chief, Department of Anesthesia, Veterans Administration Hospital, and H. E. HOFF, Professor of Physiology, Baylor University College of Medicine, Houston, Tex.

3. "New Technics in Nerve Block as Suggested by Radiographic Visualization," JAMES C. APPLETON, McKinney Veterans Hospital, McKinney, Tex.

Intermission

4. Panel Discussion, EARL F. WEIR, Dallas, Moderator.
"Special Problems in Anesthesia as Imposed by Pathological Physiology," ROBERT BRUCE DODD, Dallas, Tex.
Panel Discussion opened by Oliver F. Bush, Dallas, Tex.; A. A. Gentling, Fort Worth, Tex.; I. E. Lambeth, Dallas, Tex.; G. G. Mullikin, Dallas, Tex.; and J. B. Wood, Dallas, Tex.

Thursday, November 8, 2:00 p.m.

Baker Hotel, Room 6

5. "Anesthesia for Office Procedures," OLIVER F. BUSH, Dallas, Tex.

6. "Curare and Curare Antidotes," LLOYD D. SEAGER, Professor of Physiology and Pharmacology, University of Arkansas School of Medicine, Little Rock, Ark.

Intermission

7. "Pediatric Anesthesia" (Lantern Slides), RAY T. PARMLEY, Wichita, Kan.

8. "Management of Cardiac Arrest" (Lantern Slides), HENRY W. CROUCH, Department of Anesthesia, Veterans Administration Hospital, Jefferson Barracks, Mo.

Election of Officers.

SECTION ON MEDICAL EDUCATION AND HOSPITAL TRAINING

Adolphus Hotel, Parlor B

Officers

Chairman—W. T. Sanger, Richmond, Va.
Vice-Chairman—Trawick H. Stubbs, Columbia, Mo.
Secretary—David S. Pankratz, University, Miss.

Hosts from the Dallas County Medical Society—William A. Altman, A. J. Gill, LeRoy J. Kleinsasser and Ben A. Merrick.

Tuesday, November 6, 2:00 p.m.

Adolphus Hotel, Parlor B

1. "The Medical Faculty and the Administration of Its Affiliated Hospitals," B. I. BURNS, Commissioner of Hospitals, Kansas City General Hospital, Kansas City, Mo.

2. Round-Table Discussion, "A Decade of Medical School and Hospital Relationships." Subtopics: (a) "Methods of Financing University Hospitals," (b) "Graduate and Postgraduate Medical Education," (c) "Medical School and Veterans Administration Cooperation," and (d) "The Role of Medical Schools in Civil Defense."
Discussion opened by JOHN C. MACKENZIE, Director of Touro Infirmary, and Lecturer, Department of Public Health, Tulane University School of Medicine, New Orleans, La.; ROSCOE L. PULLEN, Vice Dean and Director of Graduate Medicine, Tulane University School of Medicine, New Orleans, La.; FRANK R. LOCK, Associate Dean and Professor of Obstetrics and Gynecology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.; D. BAILEY CALVIN, Dean, Student and Curricular Affairs, University of Texas Medical Branch, Galveston, Tex.; (Mr.) FRANK GRONER, Hospital Administrator, Baptist Memorial Hospital, Memphis, Tenn.; RICHARD O. CANNON, II, Director of Vanderbilt University Hospital, Nashville, Tenn.

Wednesday, November 7, 2:00 p.m.

Adolphus Hotel, Parlor B

3. "Professional Training for General Medical Practice," CHAUNCEY D. LEAKE, Vice-President and Professor of

Pharmacology, University of Texas Medical Branch, Galveston, Tex.

4. "The Problem of Scholastic Deficiencies in Medical Schools," A. J. GILL, Associate Dean, and Associate Professor of Pathology, Southwestern Medical School of the University of Texas, Dallas, Tex.

5. "Psychiatry and the Medical Student," WARREN T. BROWN, Associate Dean and Professor of Neuropsychiatry, Baylor University College of Medicine, Houston, Tex.

6. Chairman's Address: "Medical Research in the South Grows Apace," W. T. SANGER, President, Medical College of Virginia, Richmond, Va.

Discussion after each of above papers.

Election of Officers.

SECTION ON PUBLIC HEALTH

Baker Hotel, Room 4

Officers

Chairman—James W. Bass, Dallas, Tex.
Vice-Chairman—Newman H. Dyer, Charleston, W. Va.
Secretary—W. L. Treuting, New Orleans, La.

Hosts from the Dallas County Medical Society—James W. Bass, Horace E. Duncan, Walter B. Mantooth, Jr. and J. M. Pickard.

Presentations limited to twenty minutes with ten minutes for discussion—thirty-minute periods.

Tuesday, November 6, 9:00 a.m.

Baker Hotel, Room 4

1. Chairman's Address: "The Changing Pattern of Health Organization and Activities," JAMES W. BASS, Dallas, Tex.

2. "The Absorption and Utilization of Vitamin B_{12}" (Lantern Slides), BACON F. CHOW, Associate Professor of Biochemistry, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

Discussion opened by Tom D. Spies, Director, Nutrition Clinic, Hillman Hospital, Birmingham, Ala., and Professor and Head of Department of Nutrition and Metabolism, Northwestern University Medical School, Chicago, Ill.; Lockard C. Conley, Hematologist, Department of Medicine, Johns Hopkins Hospital, Baltimore, Md.

3. "Fluoridation of Public Drinking Waters" (Lantern Slides), JOHN W. KNUTSON, Dental Director, Chief, Division of Dental Public Health, U. S. Public Health Service, Washington, D. C.

Discussion opened by Edward Taylor, Director, Dental Health, Texas State Department of Health, Austin, Tex.

Intermission

4. "Public Health Aspects of Cardiac Disease," ALFRED W. HARRIS, Clinical Associate Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex.

Discussion opened by William S. Brumage, Director, Bureau of Heart Disease Control, Texas State Department of Health, Austin, Tex.

5. "Realism in the Rehabilitation of the Aged and Chronically Diseased Patient," HARDY A. KEMP, Professor of Preventive Medicine and Chairman of the Department of Public Health and Preventive Medicine, Baylor University College of Medicine, Houston, Tex.

6. "What the Practicing Physician Should Know About Rabies" (Lantern Slides), L. E. STARR, Public Health Veternarian, Georgia State Department of Health, Atlanta, Ga.

Discussion opened by T. F. Sellers, Director, Georgia State Department of Health, Atlanta, Ga.

Wednesday, November 7, 9:00 a.m.

Baker Hotel, Room 4

7. "A Florida Pollen Study" (Lantern Slides), JOHN M. McDONALD, Director, Division of Industrial Hygiene, Florida State Board of Health, Jacksonville, Fla.

SYMPOSIUM ON CIVIL DEFENSE

8. "Effects of Atomic Warfare."

9. "The Treatment of Mass Burns" (Lantern Slides), B. W. HAYNES, JR., Assistant Professor of Surgery, Baylor University College of Medicine, Houston, Tex.

10. "The Problem of Radiation Injury Resulting from Atomic Explosion" (Lantern Slides), JOS. V. SCHLOSSER, Associate Radiologist, Charity Hospital of Louisiana, New Orleans, La.

11. "Epidemiologic Aspects of Atomic and Bacteriologic Warfare," KIRK T. MOSLEY, Professor of Epidemiology, School of Public Health, University of Oklahoma, Norman, Okla.

12. "Public Health Aspects of Civil Defense," (Mr.) JOHN P. SMOUSE, Sanitary Engineer, Oklahoma State Department of Health, Oklahoma City, Okla.

Questions on the Symposium will be accepted from the floor for general discussion.

Election of Officers.

INTER-CITY UROLOGICAL SOCIETY

Chairman—Charles D. Fromm, Dallas, Tex.
Secretary—Adolphus Compere, Fort Worth, Tex.

Monday, November 5, 6:00 p.m.

Dallas Athletic Club

The Inter-City Urological Society made up of urologists from Northern Texas and Southern Oklahoma will have its regular monthly meeting at the Dallas Athletic Club, Dallas. Dinner at 6:00 p.m. followed by a discussion of interesting pyelograms. The meeting is entirely informal. Urologists in attendance upon the Southern Medical Association meeting are cordially invited and anyone planning to attend this dinner meeting should notify Dr. Rex E Van Duzen, 721 Medical Arts Building, Dallas 1, Texas.

AMERICAN COLLEGE OF CHEST PHYSICIANS

Southern Chapter

Meeting conjointly with Southern Medical Association

Adolphus Hotel

Officers

President—M. Jay Flipse, Miami, Fla.
First Vice-President—Hollis E. Johnson, Nashville, Tenn.
Second Vice-President and Chairman, Program Committee—Duane Carr, Memphis, Tenn.
Secretary-Treasurer—George R. Hodell, Houston, Tex.
Executive Council—Herbert L. Mantz, Chairman, Kansas City, Mo.; Dean B. Cole, Richmond, Va.; David H. Waterman, Knoxville, Tenn.; M. Jay Flipse, Miami, Fla.
Local Committee on Arrangements—H. Frank Carman, Chairman, and John S. Chapman, Dallas, Tex.

Presentations limited to twenty minutes, discussion open to members and guests.

Sunday, November 4

Adolphus Hotel

7:30 a.m.—Breakfast meeting of officers and council.

9:00 a.m.—Registration.

Sunday, November 4, 9:30 a.m.

Adolphus Hotel, Parlor A

Scientific Session, ALFRED GOLDMAN, St. Louis, Mo., Chairman, Medical Section, presiding.

1. "Chemotherapy in Tuberculosis" (Lantern Slides), FREDERIC J. HUGHES, JR., Lt. Col., Medical Corps, U. S. Army; Assistant Chief, Chest Disease Section, Medical Service of Fitzsimons Army Hospital and Assistant in Medicine, University of Colorado School of Medicine, and CARL W. TEMPEL, Col., Medical Corps, U. S. Army; Chief, Chest Disease Section, Medical Service of Fitzsimons Army Hospital, and Instructor in Medicine, University of Colorado School of Medicine, Denver, Colo.

2. "Physiologic Induction of Pneumothorax" (Lantern Slides), LEO E. JOHNS, JR., and JOHN H. SEABURY, Associate Professor of Medicine, Louisiana State University School of Medicine, New Orleans, La.

3. "Segmental Lung Anatomy for Interpretation of Bronchograms" (Lantern Slides), BERNARD S. KLEIMAN, Baltimore, Md.

4. "Pneumoperitoneum: General Observations and Particular Application to Preparation for Surgery," JOHN S. CHAPMAN, Clinical Associate Professor of Medicine, Southwestern Medical School of the University of Texas, Dallas, Tex., and D. O. SHIELDS, Chief of the Veterans Hospital, McKinney, Tex.

Sunday, November 4, 2:00 p.m.

Adolphus Hotel, Parlor A

Scientific Session, JOHN S. HARTER, Louisville, Ky., Chairman, Surgical Section, presiding.

5. "Resection in Pulmonary Tuberculosis" (Lantern Slides), F. H. ALLEY and FRANCIS H. COLE, Memphis, Tenn.

6. "Streptokinase-Streptodornase (Sk-Sd) in Inflammatory Diseases of the Chest" (Lantern Slides), ALFRED GOLDMAN, Associate Professor of Clinical Medicine, Washington University School of Medicine, and I. JEROME FLANCE, St. Louis, Mo.

7. "Esophageal Achlasia and Hiatus Hernia" (Lantern Slides), W. BURFORD DAVIS, Clinical Instructor in Thoracic Surgery, and JOHN S. HARTER, Assistant Clinical Professor of Surgery, University of Louisville School of Medicine, Louisville, Ky.

8. "Tumors of the Lung Other Than Bronchiogenic Carcinoma" (Lantern Slides), LAWRENCE M. SHEFTS, Assistant Professor of Surgery (Thoracic), Baylor University College of Medicine Postgraduate School, Brooke Army Hospital, Fort Sam Houston, and University of Texas Medical Branch Postgraduate School, Robert B. Green Memorial Hospital, San Antonio, Tex.

9. "Applications of Cineradiography in the Diagnosis and Management of Disease of the Thoracic Viscera," H. STEPHEN WEENS, Professor of Radiology, FRANK M. MORGAN, Resident in Radiology, J. V. WARREN, Professor of Physiology, and OSLER A. ABBOTT, Assistant Professor of Clinical Surgery (Thoracic), Emory University School of Medicine, Atlanta, Ga.

6:30 p.m.—Social Hour, Adolphus Hotel, Parlor G.

7:30 p.m.—President's Banquet, Adolphus Hotel, Parlor D, DEAN B. COLE, Richmond, Va., Toastmaster.

10. Address: "These Changing Times," M. JAY FLIPSE, President, Miami, Fla.

9:00 p.m.—X-Ray Conference, Adolphus Hotel, HOLLIS E. JOHNSON, Nashville, Tenn., Moderator. Unusual cases, diagnosed or not, are acceptable for the X-Ray Conference. Please notify Dr. Hollis E. Johnson, 2122 West End Avenue, Nashville, Tenn., of the number of films you wish to present.

Monday, November 5, 9:00 a.m.

Adolphus Hotel, Parlor A

Scientific Session, HOLLIS E. JOHNSON, Nashville, Tenn., presiding.

11. "Palliative Therapy of Inoperable Intrathoracic Malignancies," EDWARD F. SKINNER, Memphis, Tenn.

12. "Management of Spontaneous Pneumothorax," SHELDON E. DOMM and DAVID H. WATERMAN, Knoxville, Tenn.

13. "Hemoptysis Without Demonstrable Disease" (Lantern Slides), DAVID T. CARR and B. E. DOUGLASS, Rochester, Minn.

14. "Irradiation Fibrosis of the Lungs" (Lantern Slides), SYDNEY JACOBS, Assistant Professor of Clinical Medicine, Tulane University School of Medicine, New Orleans, La.

15. "The Present Status of the Use of ACTH and Cortisone in the Management of Pulmonary Diseases" (Lantern Slides), MAURICE S. SEGAL, Clinical Professor of Medicine, Tufts College Medical School, Boston, Mass.

Monday, November 5, 12:00 noon

Adolphus Hotel, Parlor A

Luncheon Meeting, M. JAY FLIPSE, President, Miami, Fla., presiding.

Report of Committees.

Election of Officers.

16. Address: "Chemotherapy of Cancers Involving the Thorax," R. LEE CLARKE, JR., Houston, Tex.

WOMAN'S AUXILIARY TO THE SOUTHERN MEDICAL ASSOCIATION

Twenty-Seventh Annual Meeting

Baker Hotel

Officers

President—Mrs. L. S. Thompson, Dallas, Tex.
President-Elect—Mrs. V. Eugene Holcombe, Charleston, W. Va.
First Vice-President—Mrs. Neil W. Woodward, Oklahoma City, Okla.
Second Vice-President—Mrs. W. W. Crawford, Hattiesburg, Miss.
Recording Secretary—Mrs. Louis K. Hundley, Pine Bluff, Ark.
Corresponding Secretary—Mrs. Warren E. Massey, Dallas, Tex.
Treasurer—Mrs. L. M. Jenkins, Miami, Fla.
Parliamentarian—Mrs. Robert C. Haynes, Marshall, Mo.
Historian—Mrs. A. L. O'Briant, Raeford, N. C.
Standing Committees—
Research and Romance of Medicine—Mrs. Charles P. Corn, Greenville, S. C.
Custodian of Records—Mrs. William W. Potter, Knoxville, Tenn.
Budget—Mrs. John W. Turner, Atlanta, Ga.
Memorial—Mrs. R. F. Stover, Miami, Fla.
Doctors Day—Mrs. Stanley A. Hill, Corinth, Miss.
Jane Todd Crawford Fund—Mrs. J. Ullman Reaves, Mobile, Ala.
Revisions—Mrs. DeWitt T. Milam, Monroe, La.
Resolutions—Mrs. Wilbur M. Salter, Anniston, Ala.

Monday, Tuesday and Wednesday, November 5, 6 and 7

Registration, Mezzanine, Baker Hotel, Monday 10:00 a.m. to 4:00 p.m., Tuesday 9:00 a.m. to 4:00 p.m. and Wednesday 9:00 a.m. to 11:00 a.m.

Tuesday, November 6, 8:00 a.m.

Baker Hotel, Room 1

Executive Board Meeting and Breakfast, Woman's Auxiliary to the Southern Medical Association, Mrs. Charles L. Martin, Dallas, Chairman. Mrs. L. S. Thompson, President, presiding.

Invocation—Mrs. Arthur A. Herold, Past President, Woman's Auxiliary to the American Medical Association and Woman's Auxiliary to the Southern Medical Association, Shreveport, La.

Greetings—Dr. Curtice Rosser, President of the Southern Medical Association, Dallas; and Dr. F. A. Holden, Chairman, Advisory Committee, Baltimore, Md.

Tuesday, November 6, 10:00 a.m.

Mercantile National Bank Building, Auditorium

Mrs. L. S. Thompson, President, presiding.

All ladies attending the Southern Medical Association meeting are cordially invited to attend.

Call to order by the President.

Invocation—Mrs. H. Leslie Moore, Dallas, Tex.

Greetings—

Dr. E. H. Cary, Past President, American Medical Association and Southern Medical Association, Dallas, Tex.

Dr. Curtice Rosser, President, Southern Medical Association, Dallas, Tex.

Dr. F. A. Holden, Chairman, Advisory Committee, Baltimore, Md.

Dr. Charles L. Martin, President, Dallas County Medical Society, Dallas, Tex.

Dr. Allen T. Stewart, President, Texas Medical Association, Lubbock, Tex.

Addresses of Welcome—

Mrs. O. W. Robinson, President, Woman's Auxiliary to the Texas Medical Association, Paris, Tex.

Mrs. Ridings E. Lee, President, Woman's Auxiliary to the Dallas County Medical Society, Dallas, Tex.

Responses to the Addresses of Welcome—Mrs. William W. Potter, Knoxville, Tenn.

Presentation of Pages.

Presentation of Mrs. V. Eugene Holcombe, President-Elect, Woman's Auxiliary to the Southern Medical Association, Charleston, W. Va.; Mrs. Harold F. Wahlquist, President, Woman's Auxiliary to the American Medical Association, Minneapolis, Minn.; Mrs. Ralph B. Eusden, President-Elect, Woman's Auxiliary to the American Medical Association, Long Beach, Calif.

Presentation of Past Presidents of the Woman's Auxiliary to the American Medical Association, Woman's Auxiliary to the Southern Medical Association, and all State Presidents.

Announcements by Chairman, Committee for Visiting Ladies, Mrs. Ridings E. Lee, Dallas, Tex.

Registration Committee—Mrs. J. Dennis O'Brien, Dallas, Tex.

Reading of Minutes of 1950 Meeting—Mrs. Louis K. Hundley, Recording Secretary, Pine Bluff, Ark.

Convention Rules of Order—Mrs. Walter Gus Elliott, Cuthbert, Ga.

Resolutions—Mrs. Wilbur M. Salter, Anniston, Ala.

Report of Officers.

Memorial Service—Mrs. R. F. Stover, Miami, Fla.

Adjournment.

Tuesday, November 6, 3:00-5:00 p.m.

Mercantile National Bank Building, Pent House

Tea honoring Mrs. Harold F. Wahlquist, President, Woman's Auxiliary to the American Medical Association and the Past Presidents of the Woman's Auxiliary to the Southern Medical Association. All visiting ladies are invited to attend.

Wednesday, November 7, 9:00 a.m.

Mercantile National Bank Building, Auditorium

Mrs. L. S. Thompson, President, presiding.

All ladies attending the Southern Medical Association meeting are cordially invited to attend.

Call to order by the President.

Invocation—Mrs. Richard H. Clark, Hattiesburg, Miss.

Reading of Minutes—Mrs. Louis K. Hundley, Recording Secretary, Pine Bluff, Ark.

Reports of Committee Chairmen.

Reports of State Councilors.

Presentation of Awards for Doctors Day Program by Mrs. Stanley A. Hill, Corinth, Miss.

Address: "A Physician's Wife Reports on Latin America," Dr. Florene Dunstan, Ph.D. (Mrs. E. M.), Atlanta, Ga.

Auditing Committee—Mrs. John W. Turner, Atlanta, Ga.; Mrs. J. Ullman Reaves, Mobile, Ala.

Courtesy Resolutions—Mrs. Wilbur M. Salter, Anniston, Ala.

Old Business.

New Business.

Report of Nominating Committee.

Election of Officers.

Installation of Officers by Mrs. E. H. Cary, First President, Woman's Auxiliary to the Southern Medical Association, Dallas, Tex.

Presentation of President's Pin and the Gavel to Incoming President, Mrs. V. Eugene Holcombe, by Mrs. L. S. Thompson, retiring President.

Announcements.

Adjournment.

Wednesday, November 7, 1:00 p.m.

Baker Hotel, Peacock Terrace

Twenty-Seventh Annual Luncheon of the Auxiliary to the Southern Medical Association. All ladies attending Southern Medical Association meeting are cordially invited to attend. Tickets may be purchased at the registration desk, Baker Hotel, Mezzanine. The luncheon is in honor of Mrs. L. S. Thompson, President, Woman's Auxiliary to the Southern Medical Association and Mrs. V. Eugene Holcombe, President-Elect, Woman's Auxiliary to the Southern Medical Association. Neiman-Marcus will present a Fashion Show, a preview of the mid-winter styles. Mrs. Cecil O. Patterson, Dallas, Program Chairman.

Mrs. L. S. Thompson, President, presiding.

Invocation—W. Harrison Baker, D.D.

Recognition of Distinguished Guests.

Presentation of Past Presidents' Pins by Mrs. George W. Feldner, New Orleans, La.

Address: Mrs. Harold F. Wahlquist, President, Woman's Auxiliary to the American Medical Association, Minneapolis, Minn.

Recognition of Committee for Visiting Ladies—Mrs. Ridings E. Lee, Mrs. Cecil O. Patterson and Mrs. Earl L. Carter.

Announcements.

Adjournment.

Wednesday, November 7, 7:00 p.m.

Baker Hotel, Crystal Ballroom

Southern Medical Association Dinner, entertainment and grand ball.

Thursday, November 8, 8:30 a.m.

Baker Hotel, Room 1

Post-Executive Board Meeting and Breakfast, Mrs. V. Eugene Holcombe, President-Elect, presiding. Mrs. Elliott Mendenhall, Dallas, Chairman.

Advisory Committee

The Advisory Committee to the Woman's Auxiliary is the Executive Committee of the Council of the Southern Medical Association: Dr. F. A. Holden, Chairman, Baltimore, Md.; Dr. R. L. Sanders, Vice-Chairman, Memphis, Tenn.; and Dr. Fred E. Woodson, Tulsa, Okla. Ex-officio members are Dr. Curtice Rosser, President, Dallas, Tex. and Dr. R. J. Wilkinson, President-Elect, Huntington, W. Va.

Council, Woman's Auxiliary to the Southern Medical Association

(All are Members of the Executive Board)

Expire 1951—
Kentucky—Mrs. Walker Owens, Mt. Vernon.
Louisiana—Mrs. George D. Feldner, New Orleans.
Maryland—Mrs. Thomas A. Christensen, College Park.
Mississippi—Mrs. Harvey F. Garrison, Jackson.
Missouri—Mrs. John J. O'Connell, St. Louis County.
Oklahoma—Mrs. Ray N. Balyeat, Oklahoma City.

Expire 1952—
Virginia—Mrs. Waverly R. Payne, Hampton.
South Carolina—Mrs. J. L. Sanders, Greenville.
Texas—Mrs. Fred W. Horn, Dallas.
Tennessee—Mrs. H. E. Christenberry, Knoxville.
West Virginia—Mrs. U. G. McClure, Charleston.

Expire 1953—
Alabama—Mrs. J. R. Horn, Jr., Bessemer.
Arkansas—Mrs. Gordon P. Oates, Little Rock.
District of Columbia—Mrs. William M. Ballinger, Washington.
Florida—Mrs. Lee E. Parmley, Winter Haven.
Georgia—Mrs. Walter Gus Elliott, Cuthbert.
North Carolina—Mrs. Edward R. Hipp, Charlotte.

Past Presidents, Woman's Auxiliary to the Southern Medical Association

(All are Members of the Executive Board)

1925, Mrs. E. H. Cary, Dallas, Tex.
*1926, Mrs. D. J. Williams, Gulfport, Miss.
1927, Mrs. Oscar M. Marchman, Dallas, Tex.
1928, Mrs. Arthur T. McCormack, Louisville, Ky.
1929, Mrs. C. W. Garrison, Little Rock, Ark.
1930, Mrs. James N. Brawner, Sr., Atlanta, Ga.
1931, Mrs. S. A. Collom, Sr., Texarkana, Tex.
1932, Mrs. Charles E. Oates, Little Rock, Ark.
1933, Mrs. Arthur A. Herold, Shreveport, La.
*1934, Mrs. Southgate Leigh, Norfolk, Va.
*1935, Mrs. J. Bonar White, Atlanta, Ga.
1936, Mrs. Oliver W. Hill, Sr., Knoxville, Tenn.
1937, Mrs. Frank N. Haggard, San Antonio, Tex.
1938, Mrs. Luther Bach, Florence, Ky.
1939, Mrs. W. K. West, Oklahoma City, Okla.
1940, Mrs. Charles P. Corn, Greenville, S. C.
1941, Mrs. M. Pinson Neal, Columbia, Mo.
1942, Mrs. J. Ullman Reaves, Mobile, Ala.
1943, Mrs. Richard H. Clark, Hattiesburg, Miss.
1944-45, Mrs. John Pierpont Helmick, Fairmont, W. Va.
1946, Mrs. W. W. Potter, Knoxville, Tenn.
1947, Mrs. Wiley R. Buffington, New Orleans, La.
1948, Mrs. Olin S. Cofer, Atlanta, Ga.
1949, Mrs. Joseph W. Kelso, Oklahoma City, Okla.
1950, Mrs. Robert C. Haynes, Marshall, Mo.

*Deceased.

COMMITTEES ON LADIES ENTERTAINMENT, DALLAS

General Chairman—Mrs. Ridings E. Lee.
General Co-Chairman—Mrs. Cecil O. Patterson.
Registration—Mrs. J. Dennis O'Brien.
Information and Pages—Mrs. David W. Carter, Jr.
Courtesy—Mrs. Ramsay Moore.
Decoration—Mrs. J. W. Duckett.
Hospitality House—Mrs. George A. Schenewerk.
Publicity—Mrs. Truitt James.
Telephone—Mrs. Joe V. Moody.
Pre-Executive Board Breakfast, Tuesday—Mrs. Charles L. Martin.
Post-Executive Board Breakfast, Thursday—Mrs. Elliott Mendenhall.
Luncheon and Fashion Show, Wednesday—Mrs. Cecil O. Patterson.
Tea—Mrs. John M. Pace.
General meeting, Tuesday—Mrs. Earl L. Carter.
General meeting, Wednesday—Mrs. J. Forrest Buchanan.

TECHNICAL EXHIBITS

Adolphus and Baker Hotels

The Technical Exhibits, always a feature of the annual meeting, will be up to the usual high standard for the Dallas meeting. There will be uniform booths and the whole layout will be found very attractive. The Technical Exhibits are very definitely a scientific and educational part of the annual meeting, where much can be learned. The physicians will find the exhibitors courteous and anxious to answer any questions that may be asked, no physician being solicited to purchase any item.

Here follow the names of the firms who have reserved space and their space number:

	Space No.
Abbott Laboratories, North Chicago, Ill.	2
Aloe Company, A. S., St. Louis, Mo.	25–28
American Hospital Supply Corporation, Evanston, Ill.	54
Ames Company, Inc., Elkhart, Ind.	77
Armour Laboratories, The, Chicago, Ill.	21
Ayerst, McKenna & Harrison, Ltd., New York, N. Y.	47
Baker Laboratories, Inc., Cleveland, O.	4
Bard-Parker Company, Inc., Danbury, Conn.	53
Baxter Laboratories, Morton Grove, Ill.	31
Bilhuber-Knoll Corporation, Orange, N. J.	52
Ciba Pharmaceutical Products, Inc., Summit, N. J.	69
Doho Chemical Corporation, The, New York, N. Y.	29
Eastman Kodak Company, Rochester, N. Y.	80
Eaton Laboratories, Inc., Norwich, N. Y.	51
Emerson Laboratories, Dallas, Tex.	44
Endo Products, Inc., Richmond Hill, N. Y.	32
Fleet Company, Inc., C. B., Lynchburg, Va.	57
Kremers-Urban Company, Milwaukee, Wis.	82
Lea & Febiger, Philadelphia, Pa.	33
Lederle Laboratories, New York, N. Y.	1
Lilly and Company, The Eli, Indianapolis, Ind.	60
Lippincott Company, J. B., Philadelphia, Pa.	24
M & R Dietetic Laboratories, Inc., Columbus, O.	61
Majors Company, J. A., New Orleans, La., and Dallas, Tex.	83–84
Mattern Manufacturing Company, F., Chicago, Ill.	65–66
Mead Johnson and Company, Evansville, Ind.	70
Merck & Company, Inc., Rahway, N. J.	58–59
Merrell Company, The William S., Cincinnati, O.	78
Meyers and Rosser, Dallas, Tex.	56
Mosby Company, The C. V., St. Louis, Mo.	23
National Live Stock and Meat Board, Chicago, Ill.	36
Parke, Davis & Company, Detroit, Mich.	72–75
Pet Milk Sales Corporation, St. Louis, Mo.	50
Pfizer & Company, Inc., Chas., Brooklyn, N. Y.	37
Pitman-Moore Company, Indianapolis, Ind.	64
Poythress and Company, Inc., William P., Richmond, Va.	71
Robins Company, Inc., A. H., Richmond, Va.	3
Sanberg Hospital Equipment Company, Dallas, Tex.	42-43
Sanborn Company, Cambridge, Mass.	76
Sandoz Chemical Works, Inc., New York, N. Y.	5
Schering Corporation, Bloomfield, N. J.	81
Searle & Company, G. D., Chicago, Ill.	38
Sharp & Dohme, Inc., Philadelphia, Pa.	39–41
Smith, Kline & French Laboratories, Philadelphia, Pa.	62
Squibb & Sons, E. R., New York, N. Y.	48-49
United Medical Equipment Company, Kansas City, Mo.	34–35
U. S. Vitamin Corporation, New York, N. Y.	45
Upjohn Company, The, Kalamazoo, Mich.	46
VanPelt & Brown, Inc., Richmond, Va.	63
Warner and Company, Inc., William R., New York, N. Y.	30
White Laboratories, Inc., Newark, N. J.	22
Winthrop-Stearns, Inc., New York, N. Y.	67–68
Wyeth, Incorporated, Philadelphia, Pa.	79

It calls for

FER-IN-SOL

FOR IRON DEFICIENCY ANEMIA, authoritative medical opinion endorses the use of pharmaceutical *iron and iron only.*

And ferrous sulfate in an acidulous vehicle is recognized as a most effective form of pharmaceutical iron.

FER-IN-SOL is a *concentrated* solution of *ferrous sulfate,* for convenient drop dosage.

Its piquant citrus flavor blends perfectly with fruit juices and leaves minimum aftertaste. Infants and children take it willingly.

Both the 15 and 50 cc. bottles of FER-IN-SOL are supplied with calibrated droppers.

MEAD'S

MEAD JOHNSON & CO.
EVANSVILLE 21, IND., U. S. A.

Recent discoveries about the nature of premenstrual tension have led to the development of an effective, safe, and *rational* method of treatment based on the prevention, or correction, of excessive water retention during the edema phase of the menstrual cycle. It has been shown that the degree of distress is related to the amount of water retained —and the corresponding gain in body weight. A gain of about 1 kilogram (2.2 pounds) is considered "normal", but when 2 or 3 kilos (or more) are gained, symptoms are usually troublesome. To control this "periodic edema" many different methods of treatment have been tried, but with little or only partial success. Now, however, the introduction of the synthetic compound, *Pyrabrom* (BROMTH®) has provided a means of treatment that produces far more satisfactory results than any heretofore available.

Although the mechanism of its action is not completely understood, clinical and pharmacological studies have shown that BROMTH is capable of neutralizing the water-fixing properties of Pitressin®. This remarkable effect has been demonstrated in carefully controlled studies in animals, and in humans as well.

Administration and Dosage: 1 or 2 tablets three times a day, beginning 3 to 5 days before expected menstruation or beginning when the symptoms are expected. (If dizziness or drowsiness occurs, reduce the daily dosage.) Discontinue as soon as the menstrual flow begins.

Packaging: BROMTH is supplied in tablets of 50 mg. each, in bottles of 100.

Caution: In some few individual cases there may be drowsiness or dizziness, so that on the days BROMTH is taken, the patient should abstain from driving an automobile or operating dangerous machinery.

BRAYTEN PHARMACEUTICAL CO., Chattanooga 9, Tenn.

The KILO is the KEY

to this Prevalent Periodic Problem:

PREMENSTRUAL TENSION

Characteristics of the premenstrual-tension syndrome:
headaches
emotional "upsets"
nervous irritability
insomnia
breast tenderness
abdominal distention
pelvic fullness
low back pain
unusual thirst
(Several of these commonly occur together, although in various combinations, and with different symptoms predominating.

TABLETS

Bromth.

Pyrabrom* Brayten

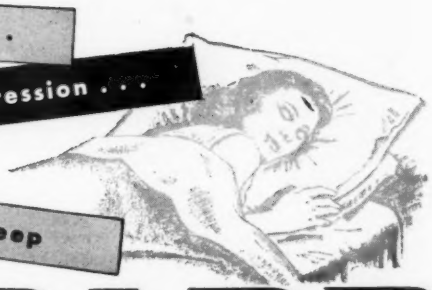
*Pyrilamine Bromotheophyllinate

to overcome smooth-muscle spasm . . .

to allay anxiety . . .

to help combat depression . . .

to promote restful sleep



BELBARB

TRADEMARK

- Provides the recognized sedative action of ***phenobarbital***

complementing

- the antispasmodic effect of ***belladonna alkaloids***

Four dosage forms . . . for individualized therapy

	Phenobarbital	Belladonna Alkaloids	Supplied
BELBARB* Tablet #1 per tablet	¼ gr.	hyoscyamine, atropine, and scopolamine in fixed proportion, approximately equivalent to Tr. Belladonna, 8 min.	Bottles of 100, 500, and 1,000 tablets
BELBARB Tablet #2 per tablet	½ gr.		Bottles of 100, 500, and 1,000 tablets
BELBARB Capsules per capsule	¼ gr.		Bottles of 100, 500, and 1,000 capsules
BELBARB Elixir per fluidrachm (4 cc.)	¼ gr.		Bottles containing 6 fl. oz., 1 pt., and 1 gal.

CCH

EFFECTIVE . . . SAFE . . . SPASMOLYSIS AND SEDATION

Literature and samples on request.

CHARLES C. HASKELL & CO., INC.

RICHMOND, VIRGINIA

*Trademark of Charles C. Haskell & Co., Inc.

A SYNERGISTICALLY ACTING LIPOTROPIC COMBINATION.....

SOLUTION

SIRNOSITOL

CHOLINE AND INOSITOL

A better response may be expected from the simultaneous administration of both choline and inositol than from the administration of either alone.[1,2] Patients unresponsive to choline often show progressive improvement and ultimate recovery when adequate amounts of inositol are given in addition to choline.[3]

POTENT

Satisfactory therapeutic response is predicated upon adequate dosage. The importance of the quantitative element in lipotropic therapy is shown by the marked clinical improvement[3,4] and evident histologic tissue restoration[4] in response to an increase in the dosage of lipotropic factors.

This daily dose of three tablespoonfuls of Solution Sirnositol provides adequate therapy:

Choline gluconate.....	22.23 Gm.
Inositol.....	2.25 Gm.

PALATABLE

Solution Sirnositol provides potent lipotropic therapy in a sugar-free, yet sweet and pleasant-tasting aqueous vehicle.

Available in 16 oz. bottles, on prescription only.

1. Best, C. H.; Lucas, C. C.; Patterson, J. M., and Ridout, J. H.: Lipotropic Properties of Inositol, Science *103*:12 (Jan. 4) 1946.

2. Dolan, R. A.: Choline and other Lipotropic Factors: Mechanisms of Action and Significance in Chronic Liver Disease, Minnesota Med. *31*: 1198 (Nov.) 1948.

3. Goldstein, M. R., and Rosahn, P. D.: Choline and Inositol Therapy of Cirrhosis of the Liver, Connecticut M. J. *9*:351 (May) 1945.

4. Cogswell, R. C.; Schiff, L.; Safdi, S. A.; Richfield, D. F.; Kumpe, C. W., and Gall, E. A.: Needle Biopsy of the Liver, J.A.M.A. *140*:385 (May 28) 1949.

C.S.C. Pharmaceuticals

A Division of COMMERCIAL SOLVENTS CORPORATION • 17 East 42nd Street, New York 17, N. Y.

a new way
to prescribe
codeine . . . . .

'Edrisal with Codeine'

M. D.

★ **relieves pain better** "Edrisal with Codeine provides better relief for more patients with painful syndromes than does [APC] with codeine."[1]

★ **no depressant effect** The 'Benzedrine' component counteracts the depressant side effects of codeine therapy. It actually lifts the patient's mood!

★ **less nausea** The 'Benzedrine' component reduces the incidence and severity of the nausea that codeine causes in some patients.

FORMULA:
Codeine sulfate . . . . ¼ gr.
'Benzedrine' Sulfate . . 2.5 mg.
Acetylsalicylic acid . . 2.5 gr.
Phenacetin . . . . . 2.5 gr.

NOTE:
for ½ gr. codeine,
prescribe 2 tablets.

2 tablets per dose

Smith, Kline & French Laboratories, Philadelphia

1. Long, C. F.: Indust. Med. 19:446 (September) 1950.

'Edrisal' & 'Benzedrine' T.M. Reg. U.S. Pat. Off.

Continued from page 960

Herbert S. Alden, Atlanta, Georgia, was Chairman, and Dr. Ray O. Noojin, Birmingham, Secretary. In the forenoon cases were presented at the Hillman Hospital Clinic. This was followed by a luncheon at the Tutwiler where discussion was had of the cases. There were some ninety dermatologists present at the meeting.

DISTRICT OF COLUMBIA

Dr. Milton C. Cobey, Washington, has been elected president of the Rheumatism Society of the District of Columbia. Dr. Alfred A. J. Den, Washington, has been elected Vice-President; and Dr. Darrell C. Crain, Secretary-Treasurer.

Dr. Geneva Turner, formerly of Washington, has moved to Port Credit, Ontario, Canada.

Dr. Irving B. Brick, Washington, Assistant Professor of Medicine at Georgetown University School of Medicine, has been certified in the subspecialty of gastroenterology by the American Board of Internal Medicine.

Dr. Francis A. Barrett, formerly of Washington, has moved to Cheyenne, Wyoming.

Dr. Walter A. Bloedorn, Washington, Dean of the George Washington University School of Medicine, has been named to the W. K. Kellogg Foundation Advisory Committee on Medicine and Public Health.

Dr. Thomas E. Stone has moved from Washington to set up practice in Frederick, Maryland.

Major General George E. Armstrong, Surgeon General of the Army, attended the Thirteenth International Congress on Military Medicine and Pharmacy in Paris, France, recently.

Dr. Walter B. Moyers, Mount Ranier, has been elected Chief of the Medical Staff of Prince Georges General Hospital by the Board of Directors.

Dr. Philip A. Caulfield has been elected President of the Providence Hospital Alumni Association. Dr. James P. Lyons has been elected Vice-President; Dr. Frank J. Sanzaro, Secretary; and Dr. Frank J. Pellegrini, Treasurer.

Dr. Hugh H. Hussey, associate professor of medicine at Georgetown University, Washington, has been appointed Associate Editor of *GP*, published by the American Academy of General Practice.

FLORIDA

Dr. John W. Cline, San Francisco, California, President of the American Medical Association, will be the guest of the Florida Medical Committee for Better Government in Miami October 5-7. He will be the speaker at the second annual meeting of the committee.

Dr. Jack M. Waldrep, Ocala, has taken a leave of absence from his practice there to take postgraduate work in urology in New York City.

Dr. John M. Morgan has opened offices in Sanford.

Dr. Bricey M. Rhodes, Tallahassee, has been elected President of the Florida State Board of Medical Examiners. Dr. Homer L. Pearson Jr., Miami, has been reelected Secretary; and Dr. Ralph Spires, DeFuniak Springs, has been elected Vice-President.

Dr. Courtlandt D. Berry, Orlando, is teaching obstetrics and gynecology at the University of Puerto Rico. He has taken a year's leave of absence from his practice in Orlando.

Dr. C. K. Hayes, formerly of Starke, will be associated with Dr. W. D. Thorpe in Madison for the practice of medicine.

Dr. Graham W. King Jr., Delray Beach, is on a temporary leave of absence from his practice to do postgraduate work.

Dr. Martin Mangels Jr., Miami, has been appointed medical director of Pan American World Airways' Latin American Division. He succeeds the late Dr. John T. MacDonald.

The annual Southeastern States Cancer Seminar will be held in Orlando on November 28-30. Headquarters will be the San Juan Hotel.

GEORGIA

The Georgia Chapter of the American Academy of General Practice will meet in Macon, October 25. Dr. Walter W. Daniel, Atlanta, is President.

The Georgia Division of the American Cancer Society will meet in the Bon Air Hotel, Augusta, October 18.

The Georgia Chapter of the American College of Surgeons will meet in the Bon Air Hotel, Augusta, October 18.

The Georgia Orthopedic Society will meet in the Bon Air Hotel, Augusta, October 18.

The Georgia State Obstetrical and Gynecological Society will meet in Augusta October 18.

Continued on page 58

THE NEW YORK POLYCLINIC

MEDICAL SCHOOL AND HOSPITAL

(ORGANIZED 1881)

(The Pioneer Post-Graduate Medical Institution in America)

DERMATOLOGY and SYPHILOLOGY

A three year course, beginning October, fulfilling all the requirements of the American Board of Dermatology and Syphilology. Also five-day seminars for specialists, for general practitioners, and in dermatopathology.

RADIOLOGY

A comprehensive review of the physics and higher mathematics involved, film interpretation, all standard general roentgen diagnostic procedures, methods of application and doses of radiation therapy, both x-ray and radium, standard and special fluoroscopic procedures. A review of dermatological lesions and tumors susceptible to roentgen therapy is given, together with methods and dosage calculation of treatments. Special attention is given to the new diagnostic methods associated with the employment of contrast media such as bronchography with Lipiodol, uterosalpingography, visualization of cardiac chambers, perirenal insufflation and myelography. Discussions covering roentgen departmental management are also included.

FOR THE GENERAL SURGEON

A combined surgical course comprising general surgery, traumatic surgery, abdominal surgery, gastroenterology, proctology, gynecological surgery, urological surgery. Attendance at lectures, witnessing operations, examination of patients preoperatively and postoperatively and follow-up in the wards postoperatively. Pathology, radiology, physical medicine, anesthesia. Cadaver demonstrations in surgical anatomy, thoracic surgery, proctology, orthopedics. Operative surgery and operative gynecology on the cadaver.

ANESTHESIA

A three months full-time course covering general and regional anesthesia, with special demonstrations in the clinics and on the cadaver of caudal, spinal, field blocks, etc.; instruction in intravenous anesthesia, oxygen therapy, resuscitation, aspiration bronchoscopy.

FOR INFORMATION ADDRESS

THE DEAN, 345 WEST 50TH STREET, NEW YORK 19, N. Y.

Pregnancy–

PRECALCIN®
CAPSULES

Lactation

PATIENT-ACCEPTANCE assured because the colorful two-tone, easy-to-swallow capsules, plus the dry powder "fill", make PRECALCIN continuously agreeable to all patients. There is no fish-oil aftertaste.

DOSAGE: 1 PRECALCIN Capsule three times daily, or more as prescribed.

AVAILABLE: Bottles of 100, 500, and 1,000 capsules.

Each capsule contains:

Dicalcium Phosphate (Anhydrous)	0.45 Gm.
Bone Phosphate*	0.15 Gm.
Vitamin A (Ester)	2,000 U.S.P. Units
Vitamin D (Irradiated Ergosterol)	400 U.S.P. Units
Thiamine Hydrochloride	3.00 mg.
Riboflavin	2.00 mg.
Niacinamide	10.00 mg.
Ascorbic Acid	30.00 mg.
Ferrous Gluconate	45.00 mg.
*Fluorine content	0.07 mg.

Walker VITAMIN PRODUCTS, INC. *Mount Vernon, N. Y.*

The *weight reduction problem*

a more complete solution . . .

OBEDRIN plus THE 60-10-70 DIET

Obedrin Tablets permit full utilization of the appetite depressing action of methamphetamine hydrochloride but eliminate the central nervous stimulation, so the patient does not suffer from nervous irritability and insomnia.

The 60-10-70 Basic diet provides the basic minimum of proteins to maintain nitrogen balance, the basic minimum of carbohydrates to "burn off' excessive fat in storage.

Obedrin Tablets and the 60-10-70 basic diet will permit loss of weight with minimum discomfort, thus inviting patient cooperation.

FORMULA

*Semoxydrine Hydrochloride	5 mg.
Pentobarbital Sodium	20 mg.
Ascorbic Acid	100 mg.
Thiamine Hydrochloride	0.5 mg.
Riboflavin	1 mg.
Niacinamide	5 mg.

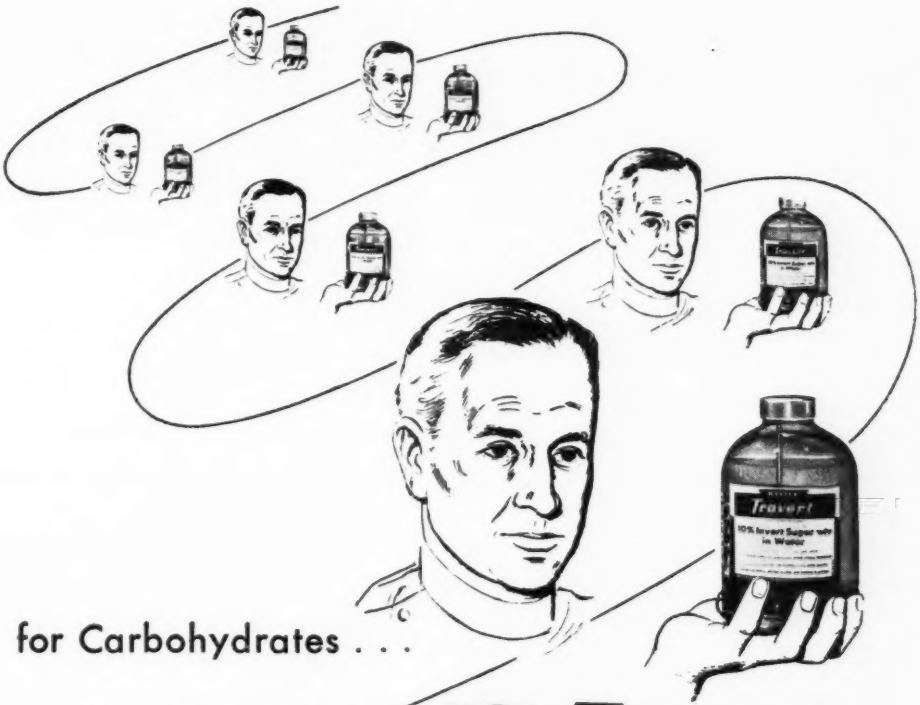
*Methamphetamine Hydrochloride

Obedrin is supplied in bottles of 100, 500 and 1,000 yellow grooved tablets.

Obedrin

A COMPLIMENTARY PAD OF DIET SHEETS AND A TRIAL SUPPLY OF OBEDRIN SENT TO PHYSICIANS ON REQUEST.

MASSENGILL BRISTOL, TENNESSEE



for Carbohydrates . . .

the Trend is to—**10% Travert**®

Twice as many calories as 5% Dextrose
No increase in infusion time, fluid volume or vein damage
Practically 100% utilization
Less spillage in urine

prescribe ***Travert***

✓To replenish glycogen stores. ✓To minimize protein catabolism by exerting a protein-sparing action. ✓To prevent ketosis by facilitating the effective metabolism of fat. ✓To help maintain hepatic function.

Travert *makes possible the administration of high caloric infusions, with minimal discomfort and inconvenience to the patient.*

10% *Travert* solutions are available in water or in saline. They are sterile, crystal clear, nonpyrogenic. 150 cc., 500 cc., 1000 cc. sizes.

product of ***for complete information,*** *simply write* "***Travert***" *on your Rx and mail*

BAXTER LABORATORIES, INC.

Morton Grove, Illinois • Cleveland, Mississippi

DISTRIBUTED AND AVAILABLE ONLY IN THE 37 STATES EAST OF THE ROCKIES (except in the city of El Paso, Texas) THROUGH

AMERICAN HOSPITAL SUPPLY CORPORATION

GENERAL OFFICES • EVANSTON, ILLINOIS

Continued from page 54

Dr. McAlpin Arnold has announced the opening of offices in Elberton for the practice of medicine.

Dr. Rafe Banks Jr. has re-opened his offices in Gainesville following his return from New York city where he was doing special work in urology.

Dr. Edmond Green has associated with Dr. Needham B. Bateman, Dr. Harold A. Ferris and Dr. Ernest A. Dunbar Jr., in Atlanta.

Dr. Eugene D. Bell has opened offices in Adel for the practice of medicine. He will be located with Dr. Fred Clements.

Dr. Thomas C. McPherson has associated with Dr. Lee Bivings in Atlanta for the practice of pediatrics.

Dr. George H. Boyd Jr. has opened offices in Clayton for the practice of medicine.

Dr. Augustin S. Carswell has opened offices in Augusta for the practice of orthopedic surgery.

Dr. William G. Chambless and Dr. Miriam W. Chambless will practice medicine in the clinic in Hamilton.

Dr. Remer Y. Clark has opened offices in Marietta for the practice of medicine.

Dr. Hugh H. Gregory has associated with Dr. Olin S. Cofer and Dr. Albert L. Evans in Atlanta for the practice of surgery and gynecology.

Dr. Lawton Q. Hair has opened offices in Augusta for the practice of internal medicine.

Dr. George T. Henry recently opened offices in Bainbridge for the practice of medicine.

Dr. Joseph L. Kurtz has opened offices in Atlanta for the practice of orthopedic surgery.

Dr. Wilbur M. Scott will be associated in the operation of the Scott Hospital in Milledgeville and will practice medicine there.

Dr. H. A. Thornton Jr. has announced that he will practice medicine in Greensboro.

Dr. John A. Ward has opened offices at the former W. D. Martin Clinic in Shellman.

Dr. William B. Dillard Jr. has joined the staff of the Howell-Quillian Clinic in Cartersville.

Dr. Earl T. Dupree has announced that he will practice medicine in Bainbridge at the Riverside Hospital.

Dr. Ernest Goodall Edwards Jr. has opened offices in Savannah for the practice of orthopedic surgery.

Dr. Harriet E. Gillette, Atlanta, has been elected a diplomat of the Board of Physical Therapy and Rehabilitation of the American Medical Association.

Dr. Arthur A. Smith has associated with Dr. C. Stedman Glisson Jr. in Atlanta for the practice of gynecology and obstetrics.

Dr. Paul H. Wilson has opened offices in Thomson for the practice of medicine.

Dr. Lewis Ross Whatley has joined the staff of the Howell-Quillian Clinic in Cartersville.

Dr. Loyd C. Yeargin, a native of Hartwell, has opened offices in Dalton in the clinic of the late Dr. George S. Kerr.

KENTUCKY

The Centennial Meeting of the Kentucky State Medical Association will be held in Louisville, October 2-4. The Council of the Association has designated the meeting as the Ephraim McDowell Memorial Meeting in a tribute to one of Kentucky's most distinguished surgeons. There will be about 25 scientific exhibits, and technical exhibits will number approximately 64.

Dr. Carlisle R. Morse, Louisville, has been appointed Chairman of the Diabetic Committee of the Kentucky State Medical Association.

Dr. Abbott Cull, Carrollton, a graduate of the University of Louisville School of Medicine, has opened offices in Corinth.

Dr. Robert S. Leake, a graduate of the University of Cincinnati College of Medicine, Cincinnati, will be associated with Dr. W. R. Miner and Dr. W. Vinson Pierce in Covington for the practice of urology.

Dr. Hubert C. Jones, formerly associated with the Lexington Clinic, Lexington, has opened offices in Berea.

Dr. Joseph R. Griffitt has opened offices in Mt. Washington.

Dr. W. W. Borsch Jr. has associated with Dr. John E. Ryan in Louisville.

Dr. Everett H. Sanneman Jr. has associated with Dr. Marion F. Beard in Louisville.

Continued on Page 62

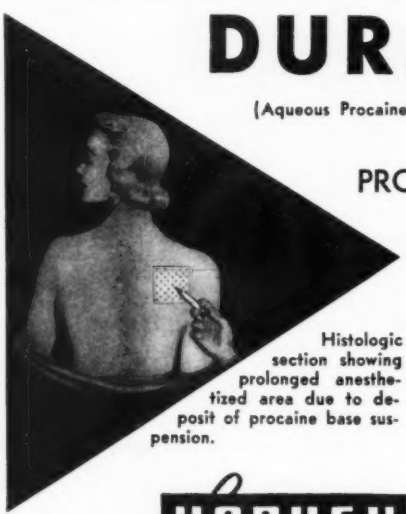
DURACAINE

(Aqueous Procaine Base Suspension 20 mg. per cc.)

PROVIDES

PROLONGED RELIEF FROM LOCAL PAIN

from 3 days to 3 weeks



Histologic section showing prolonged anesthetized area due to deposit of procaine base suspension.

An aqueous procaine suspension which is safe, fast acting, and gives relief from pain for periods ranging from 3 days to 3 weeks.

CLINICAL INDICATIONS

Bursitis, pruritic lesions, sciatica, low back syndrome, torticollis, myositis, rheumatoid arthritis and allied conditions.

DOSAGE: 2 cc. to 5 cc. injected into affected area. Duracaine is supplied in 10 cc. rubber stoppered multiple dose vials containing 20 mg. of procaine base per cc.

Inexpensive, effective medication.

Write for literature.

Duracaine is a Trade Mark, fully covered by patents pending.

HARVEY Laboratories

PHILADELPHIA 47, PA.

428-30 South 13th Street

Philadelphia 47, Penna.

Manufacturers of DOLAMIN ampuls (ammonium sulfate solution), Trade Mark Reg.

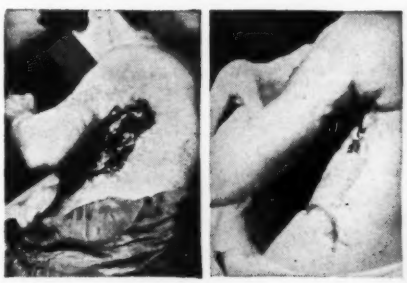
Outstanding results with Furacin

Reasons for the clinical effectiveness of Furacin® include: a wide antibacterial spectrum, including many gram-negative and gram-positive organisms — effectiveness in the presence of wound exudates — lack of cytotoxicity: no interference with healing or phagocytosis — water-miscible vehicles which dissolve in exudates — low incidence of sensitization: less than 5% — ability to minimize malodor of infected lesions — stability.

Furacin preparations contain Furacin 0.2% brand of nitrofurazone N.N.R. dissolved in water-miscible vehicles.

for example:

IN INFECTED LESIONS...



Progressive infection of a lacerated scar of the axilla had existed for ten years. All previous attempts to control this chronic infection had failed. Furacin Soluble Dressing brought the infection under control within one week.* Photo, at right above, shows condition after skin-grafting.

*Meyer, J. H.: J. Internat. Coll. Surg. 13:748, 1950.

Literature on request

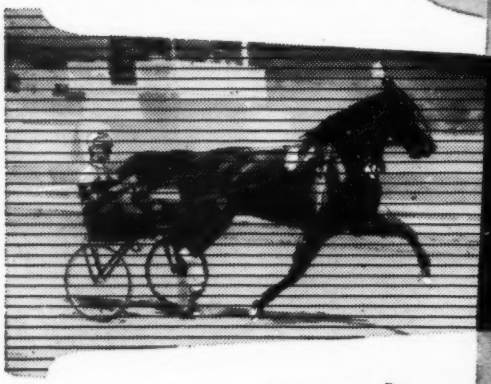
FURACIN®
SOLUBLE DRESSING
N. N. R.
(BRAND OF NITROFURAZONE)
CONTAINS 0.2% NITROFURAZONE N. N. R. IN A WATER SOLUBLE BASE.
CAUTION: TO BE DISPENSED ONLY BY OR ON THE PRESCRIPTION OF A PHYSICIAN.
WARNING: THIS DRUG MAY CAUSE SENSITIZATION. IF SENSITIZATION OCCURS, ITS USE SHOULD BE DISCONTINUED.
LITERATURE AVAILABLE TO PHYSICIANS ON REQUEST.
AN ANTIBACTERIAL PREPARATION FOR TOPICAL APPLICATION.
E. A. TON Inc.
NORWICH, NEW YORK
ONE POUND AVOIR. 453.6 GRAM

E. A. TON LABORATORIES Inc.
NORWICH, NEW YORK

The NITROFURANS
O.N R
A unique class of antimicrobials

FURACIN SOLUBLE DRESSING • FURACIN SOLUTION • FURACIN ANHYDROUS EAR SOLUTION

even in stubborn
slow healing **wounds**
burns
ulcers
(decubitus, varicose, diabetic)



Desitin®
OINTMENT
the external
cod liver oil therapy

accelerates healing

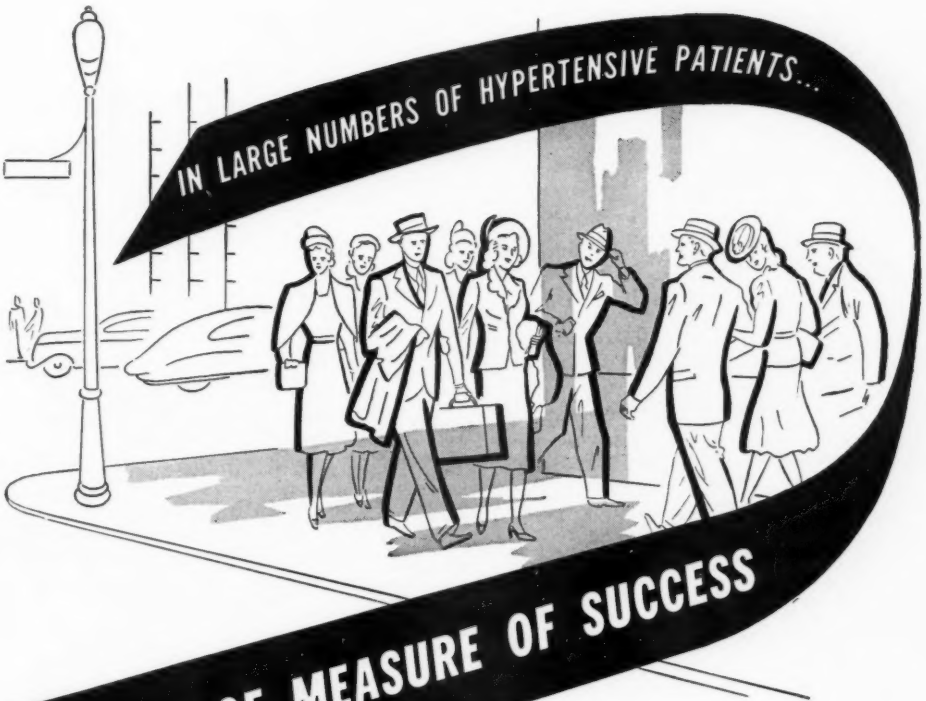
New clinical studies[1] again prove the ability of Desitin Ointment to ease pain, inhibit infection, stimulate healthy granulation, and accelerate smooth epithelization in lacerated, denuded, ulcerated surface tissues . . . often in conditions resistant to other therapy.

protective, soothing, healing **Desitin Ointment** is a self-sterilizing blend of high grade, crude Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed. Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.

write for ***samples*** *and reprint*

1. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surg. 18:512. 1949.

Desitin CHEMICAL COMPANY
70 Ship Street, Providence 2, R. I.



Successful therapeutic results with VERATRITE in essential hypertension are measured in terms of a fall in blood pressure, effective relief of symptoms and rehabilitation of the patient to a useful, productive life.

The most significant effects of VERATRITE are circulatory improvement and a new sense of well-being for the patient. Furthermore, Veratrite exhibits a wide range of therapeutic safety and a prolonged length of action without serious side-effects, due to its content of *whole-powdered* veratrum viride, Biologically Standardized.

Supplied: Bottles of 100, 500, 1000 at prescription pharmacies everywhere.

ECONOMY IS AN IMPORTANT ADVANTAGE OF VERATRITE THERAPY

Each VERATRITE Tabule contains:
Veratrum Viride . . . . . 3 Craw Units*
Sodium Nitrite . . . . . 1 grain
Phenobarbital . . . . . ¼ grain
Beginning Dose: 2 tabules t.i.d., after meals.

***Biologically Standardized for toxicity by the Craw Daphnia Magna Assay.**

Veratrite®

IRWIN, NEISLER & COMPANY DECATUR, ILLINOIS

Continued from page 58

Dr. R. J. Seebold, a graduate of the University of Louisville, has opened offices in Beuchel.

Dr. W. Burr Atkinson, Lebanon, plans to share professional quarters with Dr. W. W. Shepherd in Campbellsville.

Dr. George L. Richardson, Beechmont, has moved to Adairville where he will practice medicine.

Dr. Eugene Tuess, a native of Estonia, has joined the medical staff of the State Tuberculosis Hospital at Glasgow.

Dr. Mervin B. O'Neil has associated with Dr. I. A. Arnold in Louisville.

Dr. Marc James Reardon, a native of Cincinnati, Ohio, has moved to Covington where he will practice general and thoracic surgery.

Dr. I. Wilson Gittleman has opened offices in Louisville for the practice of Cardiology and Peripheral Vascular Disease and Internal Medicine.

Dr. O. D. Maxey has opened offices in Paducah for the practice of urology.

Dr. William H. Rosenblatt, Louisville, is doing postgraduate work at the University of Pennsylvania.

Dr. Ewen Fraser, formerly of Edinburgh, Scotland, has been named Health Officer of Campbell County.

Dr. Leonard T. Davidson, Louisville, has been elected President of the Kentucky Society for the Advancement of Pediatrics; Dr. William Maxson, Lexington, has been elected Vice-President; and Dr. Cathryn Handelman, Secretary-Treasurer.

LOUISIANA

Dr. Ralph E. King, Winnsboro, was presented the Axson-Choppin Award at the annual meeting of the Louisiana Association of Public Health Workers in Alexandria recently. The award is presented annually to the person outside the field of public health who renders valuable service to the cause of public health.

The Tulane University School of Medicine, New Orleans, has received an anonymous gift of $5,000 to help establish a center for the hard of hearing. The gift will be used to purchase new equipment for the center.

Dr. Edwin D. Kilbourne, New Orleans, has been appointed associate professor of medicine and director of the division of infectious disease in the Tulane School of Medicine.

Dr. Albert Segaloff, New Orleans, assistant professor of clinical medicine at the Tulane School of Medicine, has received the Ciba Award for the Study of Internal Secretions in recognition of his work in endocrinology.

Dr. Grace A. Goldsmith, New Orleans, professor of medicine at the Tulane School of Medicine, has been elected Councilor of the American Institute of Nutrition.

Dr. Harry D. Morris, New Orleans, has been elected a member of the American Orthopedic Association.

Dr. R. L. Simmons, New Orleans, professor and head of the Department of Public Health at the Louisiana State University School of Medicine, recently spent two weeks in Honduras making a survey of public health standards on banana plantations of the Standard Fruit Company.

Dr. Myron E. Wegman, professor and head of the Department of Pediatrics at the Louisiana State University School of Medicine, New Orleans, recently spent six weeks in Ecuador under the sponsorship of the Pan American Sanitary Bureau of the World Health Organization. Dr. Wegman will help the government of Ecuador develop a plan for maternal and child care.

MARYLAND

The Third Assembly of the Maryland Academy of General Practice will meet in the Lord Baltimore Hotel, Baltimore, October 4. Dr. Charles F. O'Donnell, Baltimore, is President of the Academy.

The University of Maryland School of Medicine, Baltimore, has announced a postgraduate course in Anatomy of the head as applied to the eye, ear, nose and throat, beginning October 2.

A Symposium on Drug Addiction for October 13 is planned by the joint Symposia Committee of the Medical and Chirurgical Faculty of the State of Maryland and the Baltimore City Bar Association.

The Southeastern Surgical Congress, Northeastern Section, met in Baltimore at the Lord Baltimore Hotel, September 13-15. Dr. W. Raymond McKenzie, Baltimore, was Chairman of the Committee on Convention Arrangements. Other members of the Committee were Dr. Waverly R. Payne, Newport News, Virginia, Dr. Harry Lee Claud, Washington, D. C., Dr. Everett Lyle

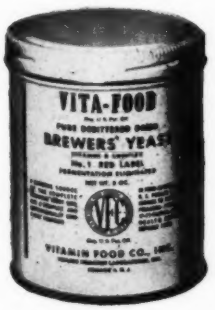
Continued on page 68

DEPENDABLE

Brewers' Yeast is the protein food, which contains in addition the B vitamins in high amounts and the factors which act in the relief of Pellagra. When the properly made grain-grown yeast is dried and economically distributed, it furnishes a valuable and economical source of balanced proteins for the every-day diet, as well as the needed B vitamins. So used, this food yeast aids in the prevention of Pellagra, and insures the daily needed B vitamins.

Pellagra is but one use for the yeast. It is being increasingly used in nutritional disorders where the physician wishes to be sure of enough vitamin B along with the other diet indicated.

VITA-FOOD Green Label, widely used for pellagra, and VITA-FOOD Red Label, in general practice, continue to be dependable sources of the needed whole of the entire vitamin B complex, with a record unexcelled in nutrition and medicine.



VITAMIN FOOD CO. INC.

187 Sylvan Avenue Newark 4, N. J.

Complete and lasting relief to 90% of patients with

nausea and vomiting of pregnancy

A recent clinical study[1] finds 'Dexedrine' remarkably effective in the treatment of the nausea and vomiting of pregnancy.

The author states:

1. "In a series of 165 patients with nausea and vomiting of pregnancy, 'Dexedrine' Sulfate produced complete relief in 148, or 90% .... Marked improvement occurred in almost every case within three days .... Complete relief occurred in four to ten days."

2. "'Dexedrine' has definite advantages over other treatments, most important of which are the mental and physical alertness, and the general feeling of well-being which it produces."

The study concludes: 'Dexedrine' "usually gives prompt and lasting relief; it is effective orally; it produces no significant side effects; and it gives mental and physical stimulation which improves the patient's morale and enables her to carry on normal activities."

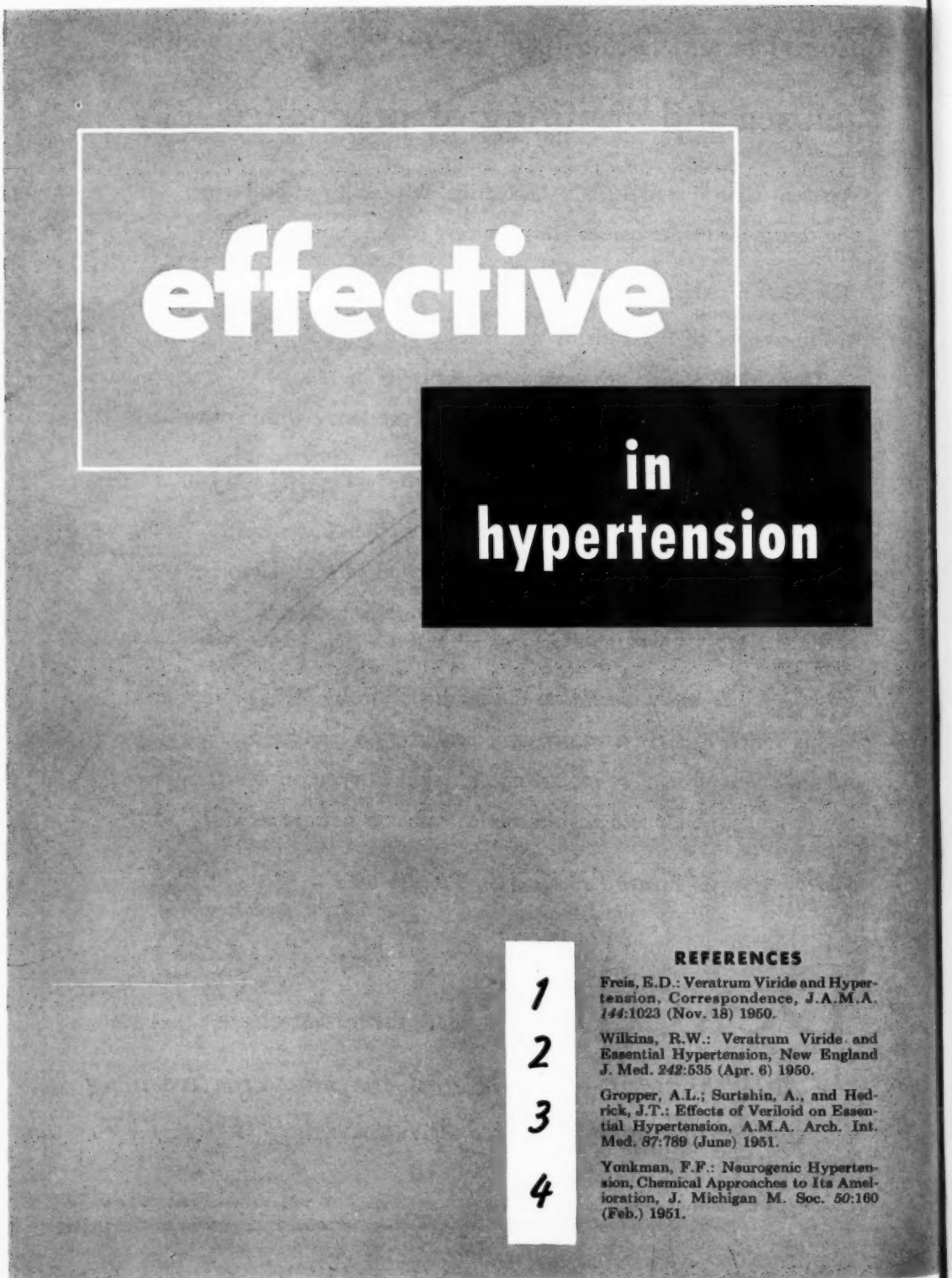
Smith, Kline & French Laboratories, Philadelphia

Dexedrine* tablets & elixir

the antidepressant of choice and the most effective drug for control of appetite in weight reduction

*T.M. Reg. U.S. Pat. Off. for dextro-amphetamine sulfate, S.K.F.

1. Anspaugh, R. D.: Effects of Dexedrine Sulfate on Nausea and Vomiting of Pregnancy, Am J. Obst. & Gynec. 60:888 (Oct.) 1950.



1
2
3
4

REFERENCES

Freis, E.D.: Veratrum Viride and Hypertension, Correspondence, J.A.M.A. *144*:1023 (Nov. 18) 1950.

Wilkins, R.W.: Veratrum Viride and Essential Hypertension, New England J. Med. *242*:535 (Apr. 6) 1950.

Gropper, A.L.; Surtshin, A., and Hedrick, J.T.: Effects of Veriloid on Essential Hypertension, A.M.A. Arch. Int. Med. *87*:789 (June) 1951.

Yonkman, F.F.: Neurogenic Hypertension, Chemical Approaches to Its Amelioration, J. Michigan M. Soc. *50*:160 (Feb.) 1951.

A potent hypotensive principle biologically standardized in mammals

Veriloid is probably the most effective hypotensive agent available today.[1] Its characteristic effect, with careful administration, appears to be one of moderation rather than elimination of the hypertension.[2] The therapeutic ratio of Veriloid is relatively high, and long-continued treatment is possible because its administration does not produce idiosyncransy or tolerance in most patients treated.[2,3,4]

In one study, the administration of Veriloid brought striking relief from hypertension and its disturbing discomforts in 80 per cent of patients with essential hypertension.[2] Veriloid controlled the blood pressure and produced a gratifying, beneficial effect, even after the failure of other hypotensive drugs in malignant hypertension in the preuremic stage and in hypertensive encephalopathy.[1,2] Veriloid has been found to control neurogenic hypertension, even after refractoriness to ganglionic blocking agents had developed.[4]

VERILOID*

Clinical experience shows that Veriloid is effective in all forms of hypertension—mild, moderate and severe, and gratifying objective as well as subjective results follow its administration.

DOSAGE: The usual daily requirement of Veriloid is 9 to 15 mg., given in divided dosage three times daily, every 6 to 8 hours, the first dose to be taken after breakfast. The evening dose should be 1 or 2 mg. larger than the other two doses of the day. However, requirements for Veriloid vary from patient to patient, and in most individuals periodic adjustment in dosage is needed, because with continued administration, patients become more reactive to Veriloid.

Veriloid is available in tablet sizes of 1, 2 and 3 mg., in bottles of 100, 500 and 1,000 tablets.

VERILOID-VPM

Containing Veriloid (2 mg.), phenobarbital (15 mg.), and mannitol hexanitrate (10 mg.), Veriloid-VPM provides valuable sedation and the vasodilating action of mannitol hexanitrate. This combination usually makes possible reduced dosage without sacrifice of therapeutic efficacy. Also, phenobarbital adds the advantage of increasing the spread between effective therapeutic dosage and the dosage at which side reactions occur.

VERILOID WITH PHENOBARBITAL

Veriloid With Phenobarbital (Veriloid, 2 mg., phenobarbital, 15 mg.), provides sedation without the action of mannitol hexanitrate. It is valuable when emotional tension must be controlled.

*Trade Mark of Riker Laboratories, Inc.

RIKER LABORATORIES, INC.
8480 BEVERLY BLVD. • LOS ANGELES 48, CALIF.

one-word prescription | for the dry and unproductive cough

when you write
℞
Pyraldine
you write for
Dihydrocodeinone Bitartrate . . . 1/6 gr.
Pyra-Maleate® . . . . . 75 mg.
Ammonium Chloride . . . . . 6 gr.
Citric Acid . . . . . 5 gr.
Alcohol 2%
in each fluidounce

A POTENT analgesic and antitussive, due to its content of dihydrocodeinone —a codeine derivative of greatly enhanced activity, remarkably free from nausea and constipation—

plus the

ANTIHISTAMINIC action provided by Pyra-Maleate (VB brand of Pyranisamine Maleate)—an effective antihistaminic with a high index of safety—

plus the

EXPECTORANT properties of ammonium chloride and citric acid . . . in a soothing, mentholated syrup vehicle.

Supplied in 1 pint bottles. An exempt narcotic preparation.

VB **Write for detailed information**

VANPELT & BROWN, Inc. *Pharmaceutical Chemists* **RICHMOND 4, VA.**

ALOE SCANOGRAPH

For exact measurement of radioactive isotopes

Compact portable units for thyroid uptake measurements or brain tumor localization

New Aloe Scanographs for exact measurement of radioactive isotopes are ideally suited to the needs of the hospital laboratory. Incorporating accurate scaling or counting systems in mobile cabinets, the Scanographs offer dependable and convenient units for research, diagnosis or therapy using various radioactive isotopes. Two basic models are available—No. JL71266 Scaling Unit designed primarily for thyroid uptake measurements and No. JL71268A Count Rate Meter, primarily for brain tumor localization. Both models are furnished in a compact cabinet with detection unit mounted on an adjustable arm. Highly efficient, this scintillation counter records 20% to 35% of the gamma rays . . . permits rapid counting.

Write for descriptive literature giving full specifications and prices.

aloe scientific *DIVISION OF THE A. S. ALOE COMPANY*

5655 Kingsbury • St. Louis 12, Missouri

What to look for in an electrocardiograph today

When you plan to buy an ECG, you may find that various makes "look alike" to you. Further consideration, however, reveals important differences. Listed below are the things that make up these differences—and also make the Viso Cardiette today's foremost electrocardiograph.

DIRECT WRITING

Viso CARDIETTE

LEADERSHIP—Imitators of original Sanborn features thus acknowledge Viso leadership, but don't reach Viso standards.

DEPENDABILITY—Making ECGs is not new to Sanborn Company—there's 28 years' development behind each Viso, and over 10,000 Visos in use today.

QUALITY—Only the finest materials and workmanship, found in the Viso, provide the precision that heart testing demands. The Viso is the FIRST ECG accepted by the Underwriters' Laboratories.

ACCURACY—The Viso meets all recognized ECG standards, exceeds many of them. The FIRST to be accepted by the AMA Council.

SERVICE—Thirty-one Sanborn offices assure continuously available expert service and close source of supply. And, you have constant contact by mail with the designers themselves.

SANBORN CO.

CAMBRIDGE 39, MASSACHUSETTS

Fine diagnostic instruments since 1917

Continued from page 62

Gage, Bluefield, West Virginia, and Mr. R. J. Wilkinson, Jr., Huntington, West Virginia, Executive Secretary of the Northeastern Section.

MISSISSIPPI

The Gulf Coast Clinical Society will meet at the Edgewater Gulf Hotel, Edgewater Park, on October 18 and 19. Dr. W. W. Lake, Pass Christian, is President of the Society.

The scientific assembly of the Mississippi Academy of General Medicine met last month at the Heidelberg Hotel in Jackson. Dr. John B. Howell, Canton, presided at the meeting.

Dr. Walter H. Simmons, Jackson, has announced the association of Dr. Ross F. Bass in the practice of Obstetrics and Gynecology.

The fifty-sixth semi-annual meeting of the Delta Medical Society will be held in Greenville October 10. Dr. William Milton Adams of Memphis, Tennessee, will be the speaker.

MISSOURI

Dr. A. N. Arneson, St. Louis, has been elected President of the St. Louis Medical Alumni Association.

Dr. James R. McVay, Kansas City, has been re-elected Chairman of the Council on Medical Service of the American Medical Association. It is the fourth time he has been elected to the chairmanship.

Dr. Edwin C. White, Kansas City, has been reappointed to the Missouri Board of Medical Examiners. Dr. W. J. Shaw, Fayette, has been appointed to the Board.

The third annual meeting of the Southwestern Surgical Congress was held last month at the Hotel Jefferson in St. Louis.

The Kansas City Southwest Clinical Society will hold its annual Fall Clinical Conference in Kansas City October 1-4. Dr. R. Lee Hoffman is President and Dr. John A. Growdon is President-Elect.

Dr. Leland E. Stillwell, chief of professional services at the Jefferson Barracks, Missouri, Veterans Administration Hospital, has been appointed manager of a 500-bed Veterans Administration Hospital at Iowa City, Iowa.

A two-day Open House, featuring exhibits tracing the history of tuberculosis care and treatment during the past 50 years, will be held at the Fiftieth Anniversary celebration of the founding of Mount St. Rose Sanatorium, part of the St. Louis University Hospitals. The Open House will be held October 6 and 7 from 3 to 8 p.m.

Dr. James L. O'Leary, St. Louis, has been elected President of the American Electroencephalographic Society.

NORTH CAROLINA

Public health nurses and graduate nurses in hospitals throughout North Carolina will be trained at a new training center for premature infant care at Duke University School of Medicine, Durham, this fall. The center is part of the North Carolina Premature Care Program, which is administered by the State Board of Health through Dr. Robert J. Murphy, pediatric consultant. It is sponsored by the North Carolina Pediatric Society. Miss Eileen Kiernan, formerly of New York Hospital, will be in charge of the nurse training phase.

Dr. Charles Hoyt Burnett, formerly Professor and Chairman of the Department of Internal Medicine at the Southwestern Medical School of the University of Texas, has been appointed Professor and Head of the Department of Medicine at the University of North Carolina School of Medicine, Chapel Hill.

OKLAHOMA

Dr. T. C. Glasscock, Ponca City, has opened offices in the Community Center there.

Dr. Charles Girod, Verdon, has accepted a position with the University of Pennsylvania hospital in Philadelphia.

Dr. Frank E. Flack, Woodward, has associated with Dr. Joe L. Duer and Dr. R. J. Camp in the Duer-Camp-Flack Clinic.

Dr. Frank K. Buster, Erick, has leased the Cheyenne Hospital from Dr. V. R. Payne, who is doing postgraduate work in Chicago.

Dr. Thelma Varian is now practicing in Wagoner.

Dr. D. L. McAllister has reopened his offices in Bristow following his release from the armed forces.

The Oklahoma City Clinical Society will hold its twenty-first annual four day Conference, October 29-November 1, in the Biltmore Hotel, Oklahoma City. Dr. John H. Lamb is President.

Continued on page 70

When it comes to explosion-proof safety...

MEET SURGERY'S No. 1 LIGHT

First in glare-free quality of illumination. In the reduction of eye-fatiguing contrasts to a practical minimum, the surgeon enjoys clearer perception . . . faster.

First for safe use in the surgery. Explosion-proof construction details—conforming to Safe Practice code of Underwriters' Laboratory—contribute to the safety of both patient and surgical team.

First in flexibility, simplified operation and balanced construction. Directional changes can be made by circulating nurse with finger-tip ease and speed.

Available Models of Portable EXPLOSION-PROOF Safelights with 17″ Light Head.

No. 51 . . . with conventional counterbalanced arm

No. 52 . . . counterbalanced telescopic height control

No. 53 . . . wall mounting

No. 54 . . . ceiling suspended

Ask your dealer or WRITE TODAY for complete specifications

WILMOT CASTLE COMPANY
1282 University Ave. Rochester 7, N. Y.

Castle **STERILIZERS AND LIGHTS**

LaMOTTE BLOOD CHEMISTRY OUTFITS

A complete line of approved Blood Chemistry Outfits, simplified so as to render accurate results with minimum time and operation.

Units available for

Albumin and Sugar in Urine
Alcohol in Blood and Urine
Alveolar Air CO_2 Tension
Bilirubin in Blood
Blood Loss in Body Fluids
Bromides in Blood
Calcium-Phosphorus in Blood
Chlorides in Blood
Cholesterol in Blood
Creatinine in Blood
Gastric Acidity
Hemoglobinometer
Icterus Index (Pigford)
Icterus Index (Micro)
Kline Test for Syphilis
pH of Blood
pH of Urine
Phenolsulfonphthalein (Block-Type)
Phenolsulfonphthalein (Roulette Type)
Specific Gravity (Blood and Body Fluids)
Sugar in Blood
Sugar in Urine
Sulfonamides (Blood and Urine)
Thiocyanate
Thymol Turbidity Test
Urea in Blood
Urea in Urine
Uric Acid in Blood
Urinalysis
Vitamin C in blood and Urine

Information on above cheerfully furnished

If you do not have The LaMotte Blood Chemistry Handbook, a complimentary copy will be sent upon request.

LaMotte Chemical Products Co.

Dept. S Towson, Baltimore 4, Md.

Continued from page 68

SOUTH CAROLINA

Dr. F. L. Geiger, director of the Division of Heart Disease and Cancer Control of the State Board of Health, has qualified for certification by the American Board of Preventive Medicine and Public Health.

Dr. W. Clough Wallace, Spartanburg, has associated with Dr. Thomas Brockman.

Dr. J. H. Crooks, Greenville, was elected Vice-Chairman of the Southeastern Dermatological Association at its recent annual meeting in Birmingham, Alabama.

TENNESSEE

The Andrew Jackson Academy of General Practice in cooperation with the Vanderbilt University School of Medicine will inaugurate postgraduate courses in medicine for general practitioners in Tennessee at no cost. The courses will offer 24 to 30 hours of postgraduate instruction in a 12-month period. Dr. Paul E. Purks, Nashville, President of the Academy, worked out the plans for the courses with a Postgraduate Committee composed of Dr. D. J. Johns, Nashville, Chairman; Dr. James P. Anderson, Nashville; Dr. John W. Frazier, Nashville; and Dr. L. C. Jackson, Dickson. The training program was adopted by the Academy at a recent meeting in Lebanon.

Dr. Frank T. Mitchell, Memphis, has been appointed Chief of Staff to the new addition to Le Bonheur Children's Hospital in Memphis.

Dr. Wendell W. Wilson has associated with Dr. Eugene P. Johnson in Old Hickory.

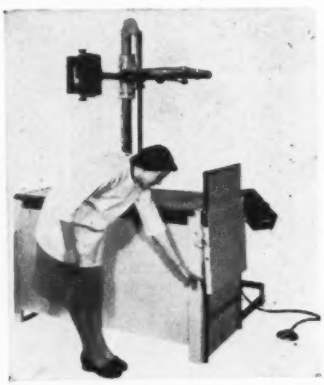
Dr. Elgin P. Kintner, formerly of South Bend, Indiana, is now head of the Department of Pathology in Blount Memorial Hospital, Maryville.

Dr. Henry Lyons has joined with his father, Dr. James S. Lyons, Rogersville, in the operation of the Lyons Hospital there.

Dr. W. Powell Hutcherson and Dr. Arch H. Bullard have opened offices in Chattanooga for the practice of obstetrics and gynecology.

Dr. R. P. Henderson, now serving as resident in radiology at the John Gaston Hospital in Memphis, will soon join the staff of the Steadman-Guy Clinic in Henderson.

Continued on page 72



the

mattern

MINIMAX

combination examination table and x-ray unit

The Mattern Minimax offers maximum versatility and requires only a minimum investment —a particularly good combination for the general practitoner.

The Minimax presents these outstanding advantages:

BE SURE TO VISIT THE MATTERN BOOTH DURING THE CONVENTION

- **Requires no special installation —takes no more space than an ordinary examination table alone. Serves as examination table with stirrups and pads.**
- **Permits horizontal and vertical radiography and fluoroscopy— with change-overs effected by merely tripping a panel release.**
- **Needs almost no servicing— since its sturdy dependability insures long-term, trouble-free operation. Requires less assistance to use; lets you give your full attention to the patient.**
- **Includes such diversified advantages of modern equipment design as telescoping panel for vertical fluoroscopy of adults, with horizontal extension for children.**
- **Integrally built lead shutters, shockproof vacuum sealed tube-head, fine focal spot, and overall neat, professional appearance.**

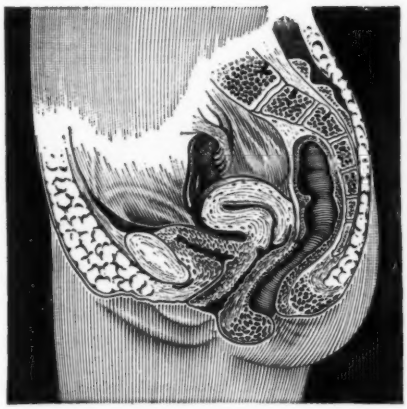
MATTERN X-RAY

Write for our illustrated Bulletin No. 142.

F. MATTERN MFG. CO.

See your local Mattern dealer, or write direct to us for information.

4635-4659 NORTH CICERO AVENUE • CHICAGO 30, ILLINOIS



To be specific...

A.V.C. IMPROVED

ALLANTOMIDE
VAGINAL
CREAM *with 9-Aminoacridine*

Here are the facts! A.V.C. IMPROVED is specific for the treatment of Trichomonas vaginalis vaginitis. This statement is substantiated by cumulative clinical evidence.

For example... Hensel* reports: "Symptomatic and bacteriologic cures were obtained in all of the 39 patients with Trichomonas vaginalis vaginitis, treated with A. V. C. IMPROVED. It was equally effective in monilial vaginitis and in nonspecific vaginitis."

*Hensel, Hubert A.: Postgraduate Medicine, 4:293-296, October, 1950.

Available in 4 oz. tubes, with or without plastic applicator.

The National Drug Company *Philadelphia 44, Pa.*

More than half a century of service to the medical profession

Head Pain as a Diagnostic Aid

Frequently the presence of head pain is overlooked. The physician learns of it only if he has made an effort to elicit the information. Etiology is the key to rational management. The patient should be warned against taking medication before diagnosis.

Friedman deplores the regrettable tendency to call any chronic recurring headache migraine. Thoroughgoing history-taking and full physical and neurological examination are essential for accurate diagnosis. The following chart gives briefly the primary diagnostic leads and therapy for some common types of headaches.

Etiology of Headache	Primary Diagnostic Data	Primary Therapy
Inflammatory e.g., Meningitis Abscess	Inflammation of intracranial structures; fever; leucocytosis; bacteriologic diag.	Specific: sulfonamides and antibiotics. Symptomatic: analgesics.
Tumor	Pain varies as spinal press. changes; skull X-ray.	Specific: surgery. Symptomatic, analgesics, &/or hypnotics.
Sinusitis	Sinus congestion and infection; cloudy X-ray.	Specific: antibiotics and drainage. Symptomatic: analgesics.
Hypertensive	Hypertension present but pain not related to b. p. level; Dihydroergotamine. relieves pain.	General hypertension therapy; sedation. Symptomatic: analgesics.
Migraine & other vascular headaches	Headache: recurrent, intense, throbbing. No organic causation; migraine in family; patient: energetic, perfectionist. Visual prodromata; g-i. upset during headache.	To abort attack: oral ergotamine plus caffeine — Cafergot (dosage given below) General: adjustment to minimize nervous stress.

Data tabulated is from: Wolf, G. Jr.: Pennsyltania M. J. 54: 25, 1951. Friedman, A. P., in Conn. H. T.: Current Therapy, 1950, Phila., Saunders Co., 1950, p. 563.

Acute Migraine Attack Therapy: Numerous clinical studies have reported effective oral treatment with Cafergot® tablets (ergotamine tartrate 1 mg. plus caffeine 100 mg.). Reeves says Cafergot affords "... predictable response, economy, flexibility, oral administration and absence of notable side effects." Proper dosage procedure is important. Failures in true migraine result from inadequate or delayed dosage.

Dosage; two tabs. at onset of attack and, if necessary 1 tab. every ½ hr. till full relief (limit: 6 tabs.)

DOSAGE INSTRUCTION SLIPS for the patient, available on request, write to:

Sandoz Pharmaceuticals

DIVISION OF SANDOZ CHEMICAL WORKS, INC.
68 CHARLTON STREET, NEW YORK 14, N. Y.

Continued from page 70

Dr. Charles Woffard, Johnson City, has been re-elected President of the Appalachian Chapter of the East Tennessee Heart Association. Dr. Homer P. Williams, Elizabethton, has been re-elected Vice-President; Dr. Ferguson Wood, Secretary; and Dr. Tom Happell Jr., Treasurer.

Dr. R. B. Wood, Knoxville, has been re-elected President of the East Tennessee Heart Association. This is his third term.

Dr. Frederick V. Vance Jr., Bristol, has opened offices there for the practice of internal medicine.

Dr. Luke Ellenburg, Greenville, has opened offices there for the practice of pediatrics.

Dr. James W. Richardson has opened offices in Morristown for the practice of medicine.

Dr. Harry E. Jones has opened offices in Chattanooga for the practice of obstetrics and gynecology.

Dr. Walter Perry Kieth has associated with Dr. C. M. Hooper and Dr. R. H. Giles in Chattanooga for the practice of obstetrics.

Dr. Melvin J. Johnson Jr., Chattanooga, has become associated with the Cecil Newel Clinic there.

Dr. Frank Harrison, Memphis, has resigned his position as chief of the Division of Anatomy at the University of Tennessee Medical Units in Memphis. He will go to Dallas, Texas, to join the Faculty of Southwestern Medical School of the University of Texas, in December. Dr. Roland H. Alden, head of the Department of Miscroscopic Anatomy at the Medical Units, will succeed Dr. Harrison.

The University of Tennessee Medical Units, Memphis, has received a grant of $30,406 from the United States Atomic Energy Commission to continue four research projects and begin a new study involving the use of radioactive sulfur. Dr. John L. Wood, professor of chemistry, will direct the new project.

Dr. Raymond Laird, Memphis, associate professor of preventive medicine at the University of Tennessee Medical Units has resigned his position to become chief consultant on malaria control in Burma for the Economic Cooperation Administration.

The University of Tennessee College of Medicine will hold a dedication ceremony in Memphis October 4, which will celebrate the completion of a new Cancer Research Laboratory and the Institute of Pathology. The ceremony will also mark the centennial of continuous medical education in Tennessee. Dr. John W. Cline, San Francisco, California, President of the American Medical Association, will be the main speaker. Other speakers will be: Dr. Robert A. Moore, dean of Washington University School of Medicine, St. Louis, Missouri; Dr. Alan T. Waterman, Director of the National Science Foundation, Washington, D. C.; and Dr. Leonard A. Scheele, Surgeon General of the United States Public Health Service, Washington, D. C.

Dr. Robert N. Buchanan Jr., Nashville, was elected Secretary of the Southeastern Dermatological Association at its recent annual meeting in Birmingham, Alabama. The 1952 meeting will be held in Nashville.

TEXAS

The Texas Pediatric Society will meet in Houston October 12-13, under the Presidency of Dr. Thomas D. McCrummen, Austin.

The Texas Surgical Society is meeting in Fort Worth October 1-2. Dr. Edward White, Dallas, is President.

The Tri-State Medical Assembly of Arkansas, Louisiana and Texas was held in Marshall September 26 and 27.

Dr. G. E. Brereton, Dallas, and Dr. R. D. Holt Jr. Meridian, have been named to the newly created Board of Vocational Nurse Examiners.

Dr. Ben G. Yeager has been appointed superintendent of the Wichita Falls State Hospital. He is formerly of the Veterans Administration Center in West Los Angeles.

A guest lecturers organization to promote interest in the general field of radiology and to support high standards of radiological work has been started by the Department of Radiology of the University of Texas Medical Branch, Galveston. The organization includes 37 radiologists from Texas, Oklahoma, Louisiana and Arkansas. Dr. Walter J. Stork, Houston, is Chairman: Dr. Joe C. Rude, Galveston, temporary Secretary; and Dr. Carroll F. Crain, Alice, Vice-Chairman. The organization will meet October 28 and 29.

The University of Texas Medical Branch has received a grant of $18,000 from the T. J. Brown and C. A. Lupton Foundation for a fellowship in the Division of Plastic Surgery to study methods of treating burns. The Study will be under the direction of Dr. T. G. Blocker Jr.

The following new appointments have been made at the University of Texas Medical Branch: Dr. M. Allen Forbes,

Continued on page 74

tablets
ampuls
powder
suppositories

high theophylline content, ready solubility
for rapid therapeutic effects in:

Bronchial Asthma
Paroxysmal Dyspnea
Cheyne-Stokes Respiration

dubin aminophyllin

(theophylline-ethylenediamine)

H. E. DUBIN LABORATORIES, Inc. 250 E. 43rd St., New York 17, N.Y.

BRAWNER'S SANITARIUM

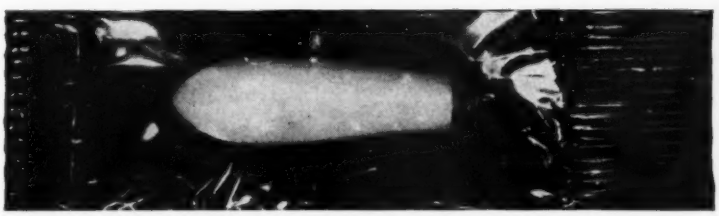
Established 1910
Smyrna, Georgia (Suburb of Atlanta)

FOR THE TREATMENT OF

Nervous and Mental Illnesses, Drug and Alcohol Addictions

JAS. N. BRAWNER, M.D., Medical Director

ALBERT F. BRAWNER, M.D., Dept. for Men JAS. N. BRAWNER, JR., M.D., Dept. for Women



NUMOROIDAL SUPPOSITORIES

Soothing the Hemorrhoidal Area... Analgesic, vasoconstrictive medication in contact with the entire hemorrhoidal zone is provided in Numoroidal Suppositories. The special emulsifying base mixes with the secretions to assure coverage of the rectal area.

Convenient: Individually packed. No refrigeration necessary.

Formula: ephedrine hydrochloride 0.22%; benzocaine 5.00%, in a special emulsifying base. Average weight of 1 suppository—1.8 Gm.

Boxes of 12

NUMOTIZINE, Inc., 900 North Franklin Street, Chicago 10, Illinois

Dependable

TILDEN PENICILLIN

Products

PENTRIZINE Tablets each contain:

Penicillin G Potassium	100,000 Units
Sulfadiazine	0.17 Gm.
Sulfamerazine	0.17 Gm.
Sulfamethazine	0.17 Gm.

More rapid, more powerful antibacterial action. Bottles of 24 tablets, packages of 1 and 1 doz. bottles.

TIL-CILLIN in Oil (Tilden)

Procaine Penicillin G in Sesame Oil with Aluminum Monostearate as a suspending agent. Each cc. 30,000 Units Penicillin. 10 cc. vials, packages of 1, 10, 25, 50.

TIL-CILLIN Aqueous (Tilden)

Procaine Penicillin G in a stabilized aqueous suspension. Each cc. 300,000 Units. No adhesion to vials, complete drainage, no waste. Vials of 10 cc., packages of 1, 10, 25, 50.

TIL-PEN Buffered Penicillin Tablets (Tilden)

Each tablet 100,000 Units Penicillin G Potassium, Buffered to counteract gastric destruction. Bottles of 12 tablets, packages of 1, 12, 24, 36 bottles.

TIL-PEN Soluble Effervescent Penicillin Tablets (Tilden)

Each tablet 100,000 Units Penicillin G Potassium, with Citric Acid and Sodium Bicarbonate. Packaged in slide boxes of 24 tablets, each foil-wrapped. Supplied 1 box of 24, and 12 boxes of 24 tablets.

TIL-PEN PENICILLIN G TROCHES with BENZOCAINE (Tilden)

Each 5000 Units. Slow dissolving for prolonged local action. Bottles of 20 troches, packages of 1, 3, 6 and 12 doz. bottles.

The TILDEN Company

New Lebanon, N. Y. St. Louis, Mo.

The Oldest Manufacturing Pharmaceutical House in America

● Founded 1824

Continued from page 72

assistant professor of syphilology; Dr. Milton Hejtmancik and Dr. Harry Levine, assistant professors of internal medicine; Dr. Irving M. Cohen, assistant professor of neurology and psychiatry; Dr. Robert L. Hargrave, assistant professor of oncology and cancer coordinator; Dr. John H. Childers, assistant professor of surgical pathology; Dr. Roger Lienke, assistant professor of pediatrics; and Dr. Caroline Rowe, assistant professor of radiology.

Dr. Etta Mae MacDonald, assistant professor of bacteriology and parasitology at the University of Texas Medical Branch, will be an exchange professor at the Institute of Microbiology at the University of Helsinki, Finland, this year.

VIRGINIA

Dr. Richard W. Fowlkes, Richmond, was elected Chairman of the Southeastern Dermatological Association at its recent annual meeting in Birmingham, Alabama.

WEST VIRGINIA

Dr. Sobisca S. Hall, Clarksburg, was elected President of the West Virginia State Medical Association recently. He will take over that office January 1, 1952, succeeding Dr. Frank J. Holroyd, Princeton. Dr. Clark K. Sleeth was elected First Vice-President; and Dr. J. C. Huffman, Buckhannon, was re-elected Second Vice-President. Dr. T. Maxfield, Charleston, was elected to his twenty-fifth term as treasurer.

The West Virginia State Medical Associtaion has reported that about 400 physicians registered at its Eighty-fourth Annual meeting in White Sulphur Springs recently.

Dr. David B. Gray has opened offices in Charleston for the practice of medicine. He is formerly of Rainelle.

Dr. Haven M. Perkins, Charleston, has opened offices there for the practice of thoracic surgery and diagnostic endoscopy.

Dr. Edwin P. Stabins has associated with Dr. Jack Basman in Charleston for the practice of pediatrics.

Dr. Ronald R. Gilbert has associated with Dr. Henry M. Escue in Charleston for the practice of urology. He is a native of Rutherfordton, North Carolina.

Dr. Dwight P. Cruikshank III, formerly of Lumberport, has associated with Dr. Charles L. Goodhand in Parkersburg.

Dr. Theresa O. Snaith, Weston, became the first woman ever to hold membership in the Council of the West Virginia State Medical Association at its recent annual meeting in White Sulphur Springs.

The West Virginia State Department of Health has announced that a total of 1,739 physicians have re-registered for the biennium ending June 30, 1953. Of these, 135 are located outside of West Virginia.

Dr. Hugh A. Bailey, Charleston, has been elected chairman of the West Virginia Chapter of the American College of Surgeons.

Dr. George F. Evans, Clarksburg, has been named Chairman of the scientific program committee for the 1952 meeting of the West Virginia State Medical Association. Dr. J. P. McMullen, Wellsburg, and Dr. E. Lyle Gage, Bluefield, are members of the committee.

The board of governors of the West Virginia University has selected an 80-acre tract of land near the Monongalia County General Hospital, near Morgantown, for the site of the new four-year school of medicine. The land was donated by the Monongalia County Court.

Dr. Thomas H. Blake, St. Albans, has been elected President of the West Virginia Academy of General Practice; Dr. Raymond A. Updike, Montgomery, Vice-President; and Dr. Halvard Wanger, Shepherdstown, Secretary.

Dr. Clarence H. Boso, Huntington, has been elected President of the West Virginia Obstetrical and Gynecological Society; Dr. Gates J. Wayburn, Huntington, Vice-President; and Dr. A. J. Villani, Welch, Secretary-Treasurer.

Dr. Eldon B. Tucker, Morgantown, has been elected President of the West Virginia Society of Anesthesiologists; Dr. John R. Godbey, Charleston, Vice-President; and Dr. E. Elizabeth McFetridge, Shepherdstown, Secretary-Treasurer.

Dr. Edgar F. Heiskell Jr., Morgantown, has opened offices there for the practice of medicine.

Dr. H. Hobart Fisher, Dunbar, has retired from his practice there and has moved to Florida.

Dr. C. S. Dorsey, Kingston, has accepted a three-year residency in dermatology at the Mayo Clinic, Rochester, Minnesota.

Dr. Russell L. Heinlein, formerly of Sisterville, will be associated in general practice with Dr. A. B. Bowyer, Charleston.

Dr. Lawrence B. Thrush has located in Clarksburg for the practice of surgery.

THE CARROL TURNER SANATORIUM

MEMPHIS, TENNESSEE, Route 6, Box 288

For the Diagnosis and Treatment of Mental and Nervous Disorders

Located on the Raleigh-La Grange Road, five miles east of the city limits. Accessible to U.S. 70 (the Bristol Highway). 53½ acres of wooded land and rolling fields. Equipment new and modern, including the latest equipment for electro-shock, physical and hydrotherapy. Special emphasis is laid upon occupational and recreational therapy under the supervision of a trained therapist. An adequate nursing personnel gives individual attention to each patient.

STUART CIRCLE HOSPITAL

413-21 Stuart Circle

RICHMOND 20, VIRGINIA

Medicine:
ALEXANDER G. BROWN, JR., M.D.
MANFRED CALL, III, M.D.
M. MORRIS PINCKNEY, M.D.
ALEXANDER G. BROWN, III, M.D.
JOHN D. CALL, M.D.

Obstetrics and Gynecology:
WM. DURWOOD SUGGS, M.D.
SPOTSWOOD ROBINS, M.D.

Orthopedics:
BEVERLEY B. CLARY, M.D.

Pediatrics:
CHARLES P. MANGUM, M.D.
ALGIE S. HURT, M.D.

Ophthalmology, Otolaryngology:
W. L. MASON, M.D.

Pathology:
REGENA BECK, M.D.

Bacteriology:
FORREST SPINDLE

Surgery:
A. STEPHENS GRAHAM, M. D.
CHARLES R. ROBINS, JR., M.D.
CARRINGTON WILLIAMS, M.D.
RICHARD A. MICHAUX, M.D.
CARRINGTON WILLIAMS, JR., M.D.

Urological Surgery:
FRANK POLE, M.D.

Oral Surgery:
GUY R. HARRISON, D.D.S.

Roentgenology and Radiology:
FRED M. HODGES, M.D.
L. O. SNEAD, M.D.
HUNTER B. FRISCHKORN, JR., M.D
WILLIAM C. BARR, M.D.

Physiotherapy:
IRMA LIVESAY

Director:
CHARLES C. HOUGH

Medal of Honor

Major General William F. Dean, of Berkeley, California—Medal of Honor. In the hard early days of the Korean War, when it was Red armor against American rifles, General Dean chose to fight in the most seriously threatened parts of the line with his men. At Taejon, just before his position was overrun, he was last seen hurling hand grenades defiantly at tanks.

General William Dean knew in his heart that it's every man's duty to defend America. You know it, too. The General's job was in Korea and he did it superbly well. Your defense job is here at home. And one of the best ways to do that job is to start right now buying your full share of United States Defense* Bonds. For remember, your Defense Bonds help keep America *strong*, just as soldiers like General Dean keep America safe. And only through America's strength can your nation . . . and your family . . . and you . . . have a life of security.

Defense is your job, too. For the sake of all our servicemen, for your own sake, help make this land so powerful that no American again may have to die in war. Buy United States Defense* Bonds now—for *peace!*

Remember when you're buying bonds for defense, you're also building personal cash savings. Remember, too, if you don't save *regularly*, you generally don't save at all. So sign up in the Payroll Savings Plan where you work, or the Bond-A-Month Plan where you bank. For your country's security, and your own, buy United States Defense Bonds!

U.S. Savings Bonds are Defense Bonds - Buy them regularly!

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America as a public service.

Saint Albans Sanatarium

RADFORD, VIRGINIA

100-bed private psychiatric hospital for the diagnosis and treatment of nervous and mental disorders, including alcoholism and drug addiction.

J. P. King, M.D. J. L. Chitwood, M.D. Diplomates American Board of Psychiatry and Neurology
T. E. Painter, M.D. Medical Consultant J. K. Morrow, M.D. D. D. Chiles, M.D.

ACUFF CLINIC

514 West Church Ave.
KNOXVILLE, TENNESSEE

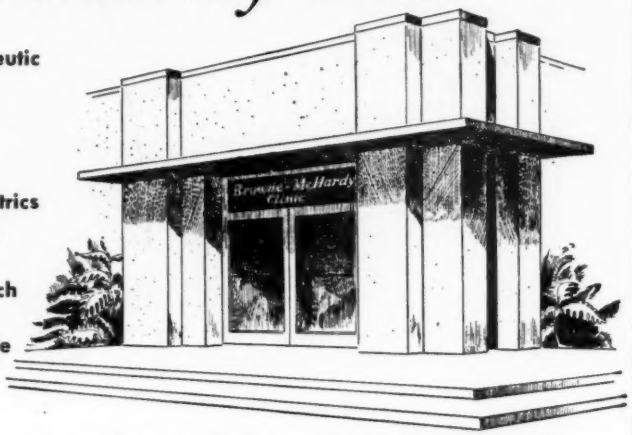
DIAGNOSIS, MEDICINE, SURGERY, ALLIED SPECIALTIES

MODERN PHYSICAL MEDICINE and REHABILITATION DEPARTMENT

The Clinic is equipped with 100 mgm. of Radium element and the latest type one quarter million volt constant potential X-Ray therapy equipment for the treatment of all forms of malignant diseases.

Browne-McHardy Clinic

- Diagnostic and Therapeutic Facilities
- Internal Medicine and Gastroenterology
- Surgery
- Gynecology and Obstetrics
- Radiology—X-ray and Radium therapy
- Laboratory and Research Departments
- Hotel facilities available



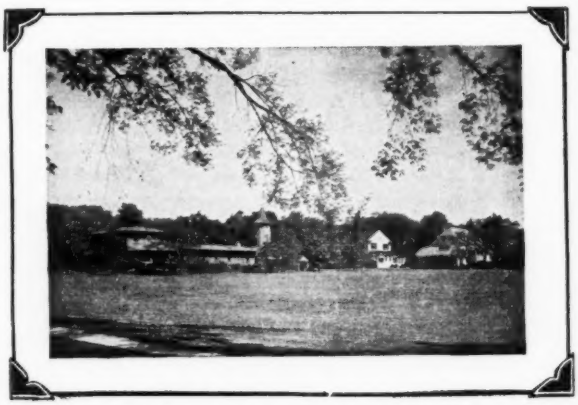
3636 ST. CHARLES AVENUE

Phone UPtown 9580 • *New Orleans, La.*

From Our

WESTBROOK PORTFOLIO

A private psychiatric sanatorium employing modern diagnostic and treatment procedures—electro shock, insulin, psychotherapy, occupational and recreational therapy—for nervous and mental disorders and problems of addiction.



Partial view of grounds showing Men's Administrative Building, The Tower under which is the beauty shop, and several private cottages including Myrtle Cottage and Cedar Cottage.

WESTBROOK SANATORIUM

Staff: PAUL V. ANDERSON, M.D., President; JOHN R. SAUNDERS, M.D., Associate; REX BLANKINSHIP, M.D., Medical Director; THOMAS F. COATES, M.D., Associate

P. O. Box 1514 RICHMOND, VIRGINIA Phone 5-3245

HILL CREST SANITARIUM

FOR NERVOUS AND MENTAL DISEASES AND ADDICTIONS

Insulin and Electro-Shock Therapy used in Selected Cases. Gradual Reduction Method used in the Treatment of Addictions.
Established in 1925

Thoroughly modern in architecture and construction. Eig'ıt departments—affording proper classification of patients. All outside rooms, attractively furnished. Several bathrooms and rooms with private bath on each floor. Also a spacious sun parlor in each department. Located on the crest of Higdon Hill, 1050 feet above sea level, overlooking the city, and surrounded by an expanse of beautiful woodland. Ample provision made for diversion and helpful occupation. Adequate night and day nursing service maintained.

James A. Becton, M.D., Physician-in-charge James Keene Ward, M.D., Associate Physician
P. O. Box 2896, Woodlawn Station, Birmingham 6, Ala. Phones 9-1151 and 9-1152

THE WALLACE SANITARIUM

Memphis, Tennessee

For the Diagnosis and Treatment of Nervous and Mental Diseases, Drug Addiction and Alcoholism.

For their varying vitamin needs

MEAD'S versatile "VI-SOLS"

- water-soluble
- pleasant tasting
- easy to use

Poly-Vi-Sol, Tri-Vi-Sol and Ce-Vi-Sol provide 3 different vitamin combinations to meet particular specifications for individual patients.

Mead's Vi-Sols can be dropped into the mouth or mixed with formula, fruit juice or cereal.

Available in 15 and 50 cc. bottles with calibrated droppers for easy dosage measurement.

	Vitamin A	Vitamin D	Ascorbic Acid	Thiamine	Riboflavin	Niacinamide
POLY-VI-SOL each 0.6 cc. supplies	5000 units	1000 units	50 mg.	1 mg.	0.8 mg.	5 mg.
TRI-VI-SOL each 0.6 cc. supplies	5000 units	1000 units	50 mg.			
CE-VI-SOL each 0.5 cc. supplies			50 mg.			

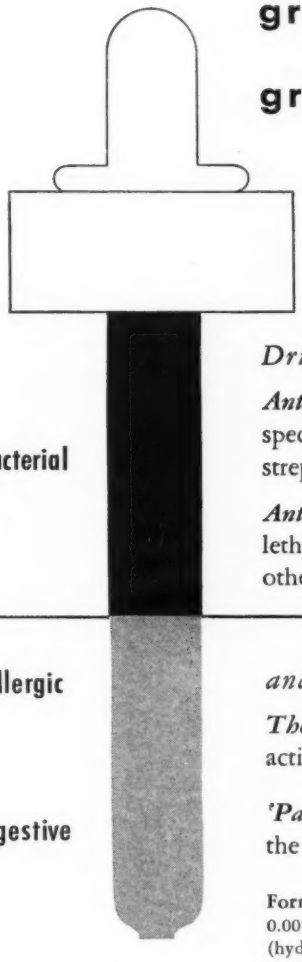
MEAD'S

MEAD JOHNSON & CO.
EVANSVILLE 21, IND., U. S. A.

this nose-drop destroys both

gram-positive and

gram-negative bacteria



In Drilitol you now have an entirely new and strikingly effective approach to the treatment of common upper respiratory tract infections.*

Drilitol contains:

Anti-gram positive gramicidin—
specific against such organisms as staphylococci, streptococci, pneumococci and diphtheroids.

Anti-gram negative polymyxin—
lethal to the Klebsiella, H. influenzae and numerous other potentially dangerous pathogens.

and Drilitol also contains:

Thenylpyramine hydrochloride—antihistaminic action for control of local allergic manifestations.

'Paredrine' Hydrobromide—vasoconstriction for the therapeutic benefits of ventilation and drainage.

Formula: Contains thenylpyramine hydrochloride, 0.2%; gramicidin, 0.005%; polymyxin B sulfate, 500 U/cc.; 'Paredrine'* Hydrobromide (hydroxyamphetamine hydrobromide, S.K.F.), 1%. Preserved with thimerosal, 1:100,000. *Dosage*: Adults: 1 dropperful in each nostril, 4 or 5 times a day. Children: ½ the adult dosage. Supplied: In ½ fl. oz. bottles with special dosage-adjusted dropper.

DRILITOL

*T.M. Reg. U.S. Pat. Off.

Smith, Kline & French Laboratories, Philadelphia

three

NEW

forms of

Chloromycetin®

Chloromycetin Cream

Chloromycetin Ophthalmic (powder for solution)

Chloromycetin Ophthalmic Ointment

Extending its fields of usefulness, CHLOROMYCETIN (Chloramphenicol, Parke-Davis) now provides topical therapy with the same outstanding advantages for which its systemic administration is so well known:

UNIFORMITY • RELIABILITY
BROAD SPECTRUM • WELL TOLERATED

Chloromycetin Cream, 1%

CHLOROMYCETIN Cream contains 1% Chloromycetin in a smooth, non-irritating water-miscible base. Applied topically, CHLOROMYCETIN Cream is well tolerated and produces rapid clinical improvement in many superficial infections and dermatological conditions.

Chloromycetin Ophthalmic (powder for solution)

Chloromycetin Ophthalmic Ointment

CHLOROMYCETIN Ophthalmic preparations provide high local concentrations — without irritation — for treatment of ocular infections.

Chloromycetin is supplied in the following forms: Chloromycetin Kapseals,® 250 mg., bottles of 16 and 100. Chloromycetin Capsules, 100 mg., bottles of 25 and 100. Chloromycetin Capsules, 50 mg., bottles of 25 and 100. Chloromycetin Cream, 1%, 1 ounce collapsible tubes. Chloromycetin Ophthalmic Ointment, 1%, ¼ ounce collapsible tubes. Chloromycetin Ophthalmic, 25 mg. dry powder for solution, individual vials with droppers.

PARKE, DAVIS & COMPANY

MEDICAMENTA VERA